San Joaquin Light and Power Magazine

CONTENTS FOR MAY

Electrical Dehydrating Plant .... Frontispiece

New Electric Process for Dehydrating Petroleum Emulsions 235

"How the Swedes Made a Country" .... Howard Sharp 246

The Feeding and Care of Dairy Calves 252

Biggest Wheat Crop in Ten Years is Predicted 255

Valley Development Progress 256

Some Poultry Facts Worth Knowing 260

The Non-Saccharine Sorghums .... Roger M. Roberts 261

Independent Oil Producers' Agency Report 262

United States Navy Increases Use of Petroleum 263

Scenes at Fresno's Annual Raisin Day Festival 264

Editorial 266

Safety First 268

The Live Wire 273

News Around the Loop 276

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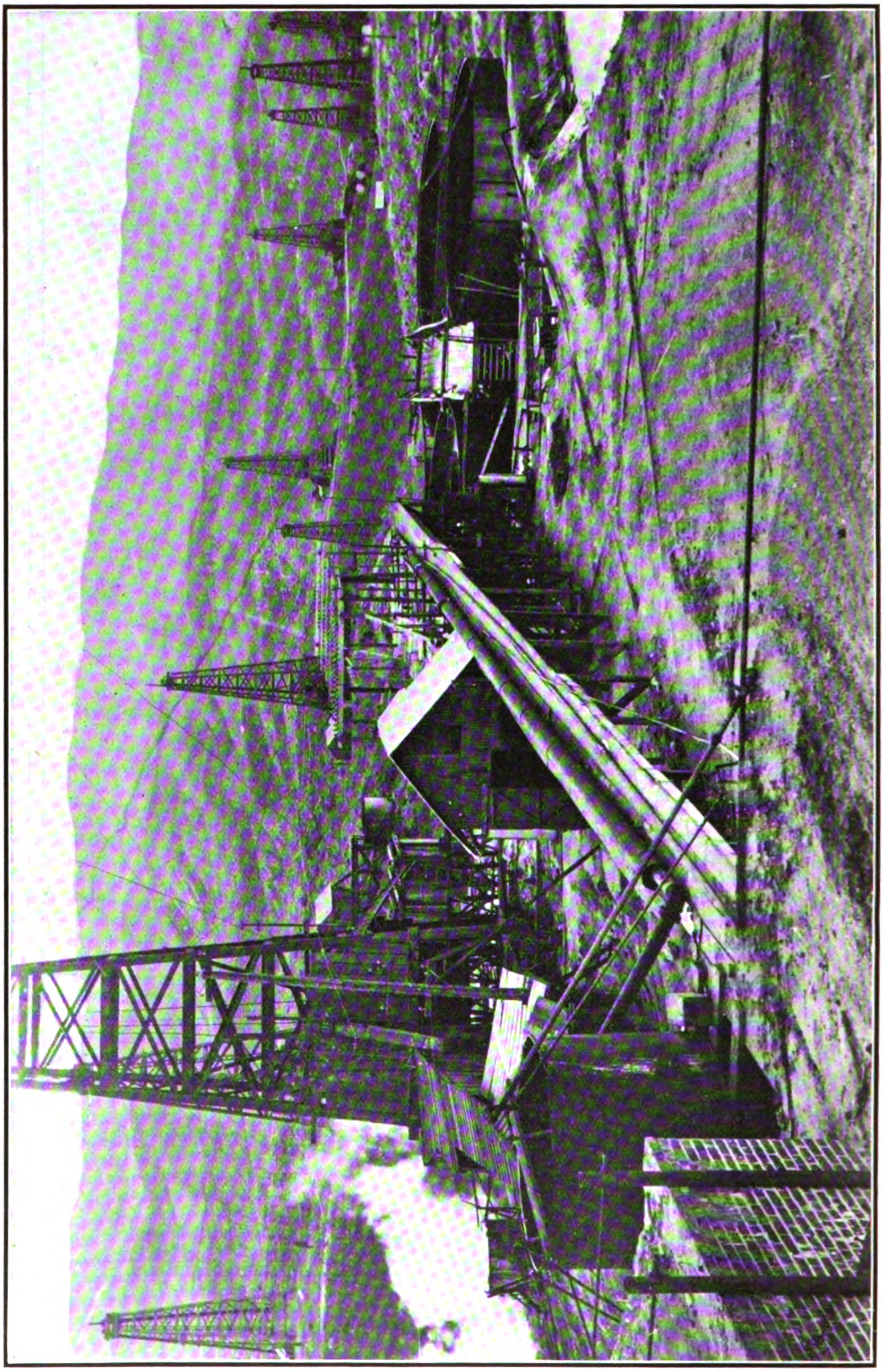

The electrical dehydrating plant in operation on the property of the Traders' Oil Company in the Midway field

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New Electrical Process for Dehydrating Petroleum Emulsions

WATER infiltration of the oil sands becomes one of the most serious production problems in almost every oilfield. At the present time it is a most important subject in a number of the oilfields of California and state-wide measures are being taken to regulate the drilling and operation of wells to minimize the danger. The trouble, for the most part, is caused by the lack of proper drilling precautions in casing off the water-producing sands from the oil-producing sands, and when the well is completed and placed on production it sooner or later begins beveloping water. The problem then confronts the producer to separate the water from the oil, or else suffer a heavy loss in the marketable value of his output.

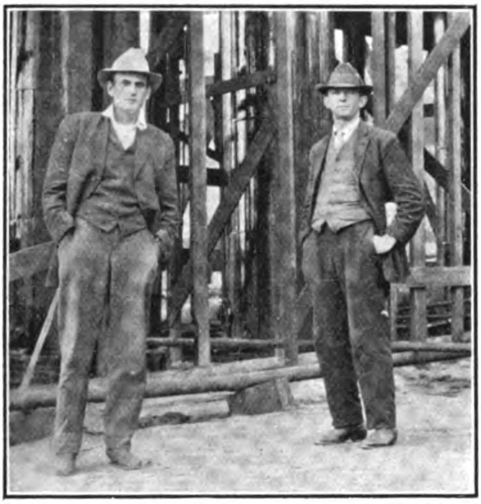
In mixtures of oil and water, the water may be present in either of two forms, as free water consisting of large globules which will settle out if the mixture is allowed to stand, or as trapped water consisting of small particles in the form of an emulsion with the oil which will not settle out at ordinary temperatures and pressures, even if the mixture is allowed to stand for a long time. The size of particles which will remain in suspension depends upon the temperature and somewhat upon the viscosity of the oil, so that there is no absolutely definite line dividing the two kinds of water.

For many years oilmen have been working on the problem of separating water from oil. Wherever the problem had to be met, treatment of some kind was devised. The roasting treatment, or the application of steam to the mixture, has been the method generally used, but owing to its heavy cost and its inability to fully perform the service intended, oil operators have been making the best of the process until more satisfactory methods have been introduced.

It has been known for a long time that the application of electric currents to an emulsion would tend to coalesce the small particles of trapped water into free water, and that if the current was put through in sufficient strength, or often enough, that the small particles would gradually collect into large enough particles to settle out under the action of gravity. This process has been applied for many years to the separation of lubricating oil from water of condensation, and has been applied with some success to the treatment of petroleum emulsions.

A new apparatus and method for the electrical treatment of emulsion have just been invented and patented, and is in actual operation in the Midway oilfield. The process is based upon a new application of the old electrical principles and it would appear that the inventors have finally attained the solution that will effectively and economically handle the mixture.

The inventors of the new process are Joseph H. Raney, superintendent of the Traders' Oil Company in the Midway field, an experienced oilman, and Robert E. Laird, a practical electrician. Mr. Raney long ago realized the need for such a process, and set about to improve upon the methods then in use. Mr. Laird, who was engaged in the electrical industry in the Midway field, became interested in Mr. Raney's work, and later was associated through his intimacy with the electrical features. The combination proved to be a happy one as both men are thoroughly competent in their respective lines, and together they have apparently solved one of the oil industry's greatest problems. They have formed, with some associates, the Raney-Laird Petroleum Dehydrating Company of Los Angeles and Taft, to market the new treaters. At the present time, a plant, which they have set up on the property of the Traders' Oil Company in the Midway, consisting of six treaters, is in successful operation and many interesting tests have been conducted to prove its superiority over the roasting method.



The inventors. Joseph H. Rainey, on the left, and Robert E. Laird

It has been found that in the treatment of a given quantity, 14,000 barrels, of the same gravity oil, 12, by the old style roasting and new electrical dehydrating methods, the new process enabled a saving of $465.95, or a saving per barrel gross of $.0333, and saving per barrel net $.0453. In addition it has been proved that the electrical treatment more effectively cleans the oil, restoring it to its natural color instead of the reddish hue that results from the roasting treatment, removes the emulsion almost entirely, increases the gravity of the cleaned output and does the work in less than one-half of the time. The plant requires no watching and no expense for upkeep.

These figures from the Traders' Oil Company tell the story:

Old Roasting Process

Gravity of oil befort treating	12
Gravity of oil after treating	12
Color of oil after treating	Red
Time of cleaning by roasting method	36 hours
Gross amount of oil before treating	14,000 barrels
Amount of oil after treating	10,301 barrels
Steam cost for settling free water from oil pumping through roasters and water burners	$300.00
Fuel for roasters	300.00
Labor attending roasters	30.00
Upkeep of roasters	40.00
Royalty	Nothing
Total cost of roaster treating	670.00
Cost of treating oil per barrel, gross	.0478
Cost of treating oil per barrel, net	.0650

New Electrical Process

Gravity of oil before treating	12
Gravity of oil after treating	13.5
Emulsion and water before treating	25 to 40%
Emulsion and water after treating,	2%
Color of oil after treating	Natural
Time of treating by electrical method	15 hours
Gross amount of oil before treating	14,000 barrels
Amount of oil after treating	10,321 barrels
Cost of power	$ 17.65
Cost of steam heating oil and pumping to treaters	104.80
Labor charged to treating plant	30.00
Royalty at ½ cent per barrel	51.60
Upkeep of dehydrating plant	Nothing
Total cost of electric treating	204.05
Cost of treating oil per barrel, gross	.0145
Cost of treating oil per barrel, net	.0197

Tests have been made which prove that the plant can effectively treat oils of different grades at the same time without in any manner imparing its efficiency. Twenty-eight gravity oil containing 25 per cent emulsion at a temperature of 70 degrees was cleaned through one treater at the rate of 350 barrels per day, while the remaining five treaters were working on 13 gravity oil containing 30 per cent emulsion at a temperature of 180 degrees. Showing the effectiveness of the operation, after cleaning the 28 gravity oil tested but 1.3% emulsion or foreign matter.

The problem of removing the trapped water is a common one, and the principal object of the invention is to provide a process for economically separating the trapped water from the body of the oil. There have already been devised various processes for doing this, and particularly there have been devised certain processes in which electricity has been used, the water particles being lined up between charged electrodes and the separating walls of oil between the particles being punctured by the electric current to produce a coalescence of the minute particles of trapped water into larger globules of free water. Previous inventors have regarded the formation of such chains as a disadvantage and have worked out various means for preventing the formation of such chains by the rotation of the electrodes or the emulsion. Raney and Laird found that the formation of chains is absolutely necessary to the proper operation of their apparatus and that the current through the chains must be maintained for an appreciable time to cause a proper treatment of the oil.

A further object of the invention is to supply and maintain a sufficient electrical potential to positively form such chains and to maintain heavy short-circuit currents through the emulsion. It is, of course, obvious that after a proper coalescence of the small particles takes place that there is no utility in maintaining such heavy or short-circuit currents. It was found that it is necessary to first allow a heavy current to pass through the chains and then to entirely interrupt the current and allow the particles of trapped water to coalesce and concentrate into larger globules of free water.

A further object of the invention is to provide positive means external to the treater proper for interrupting the current at regular intervals for the purpose of allowing a thorough coalescence of the trapped water particles into free water globules.

Previous inventors have also laid considerable stress on the downward movement of the emulsion between the electrodes so that the movement of the emulsion is in the same direction as the movement of the free water globules under the action of gravity. This has necessitated the introduction of the emulsion at the top of the treater and the removal of the cleaned and separated liquid at the bottom of the treater. The introduction of the emulsion at the top of the treater has resulted in a great deal of trouble due to heavy currents flowing over the surface of the emulsion, the emulsion being a poor insulator and various schemes have been devised for preventing such leakage currents on the surface of the emulsion. The inventors found that by admitting the emulsion to the bottom of the treater and passing it upwardly between the electrodes that they obtain a natural separation of the oil and water, the water falling and the oil rising under the action of gravity, and that they are able to maintain a large body of cleaned oil at the surface of the treater, thus doing away in a large measure with insulation troubles. By passing the emulsion slowly upwardly and allowing a portion of the globules of free water to settle downwardly through the rising emulsion they are able to cause a mechanical coalescence of the trapped water particles with such globules in their downward course. They found further that at the instant the short-circuit current flows that the resistance between the electrodes is greatly reduced and the voltage across the electrodes is lowered. It is therefore desirable to apply this voltage to only one treater at a time, as if the treaters

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Fig. 1.

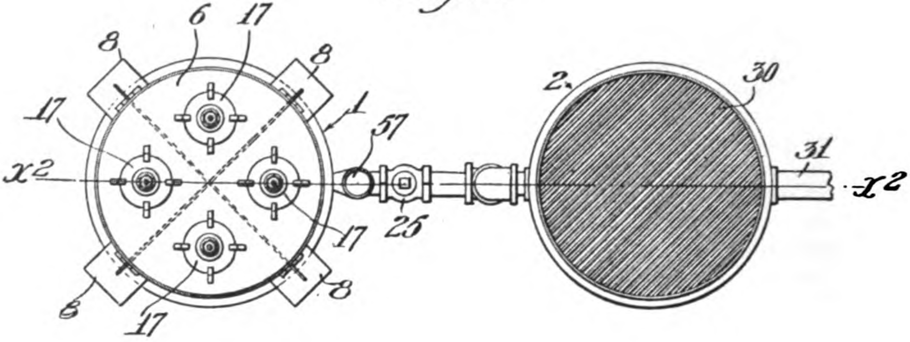


Fig. 3.

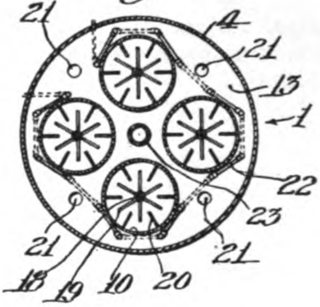


Fig. 2.

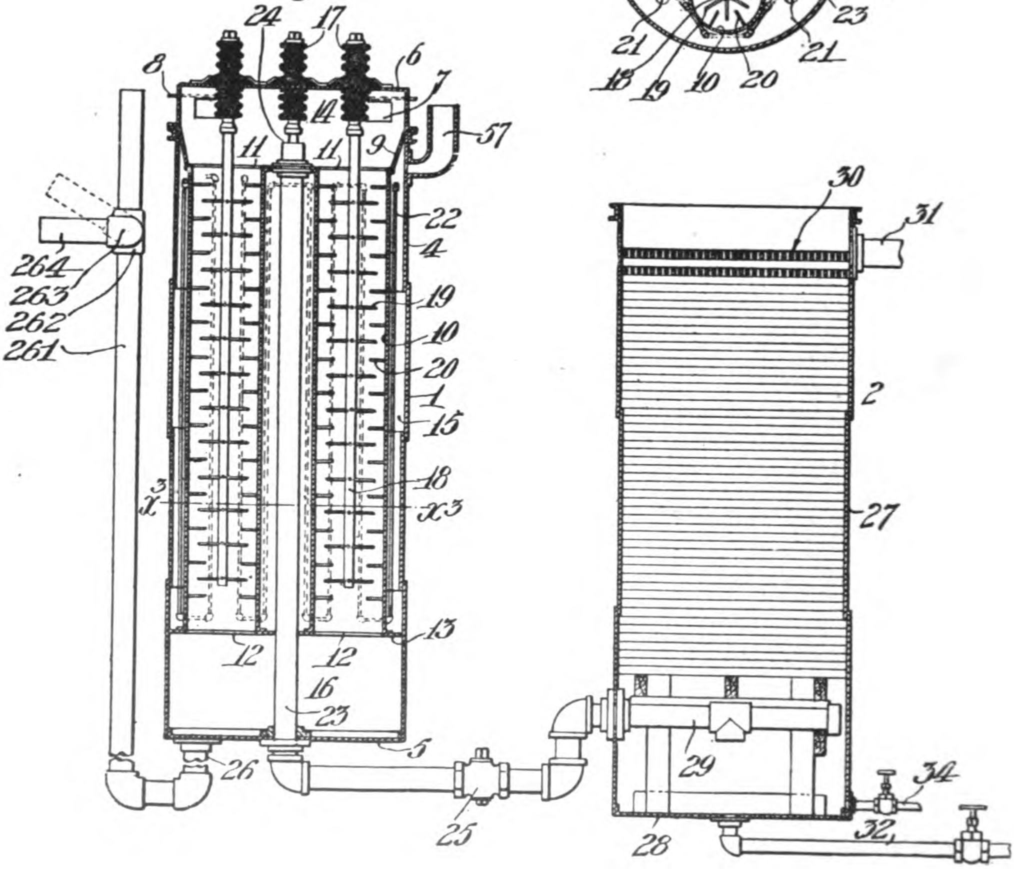


Fig. 5

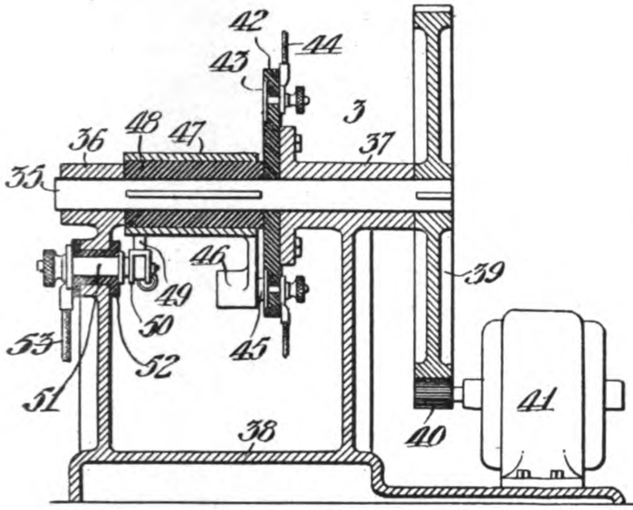


Fig. 4

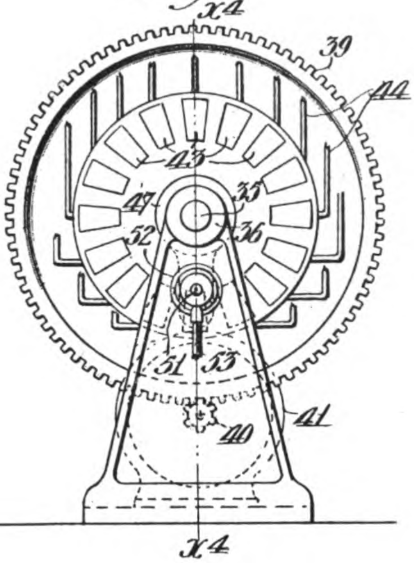
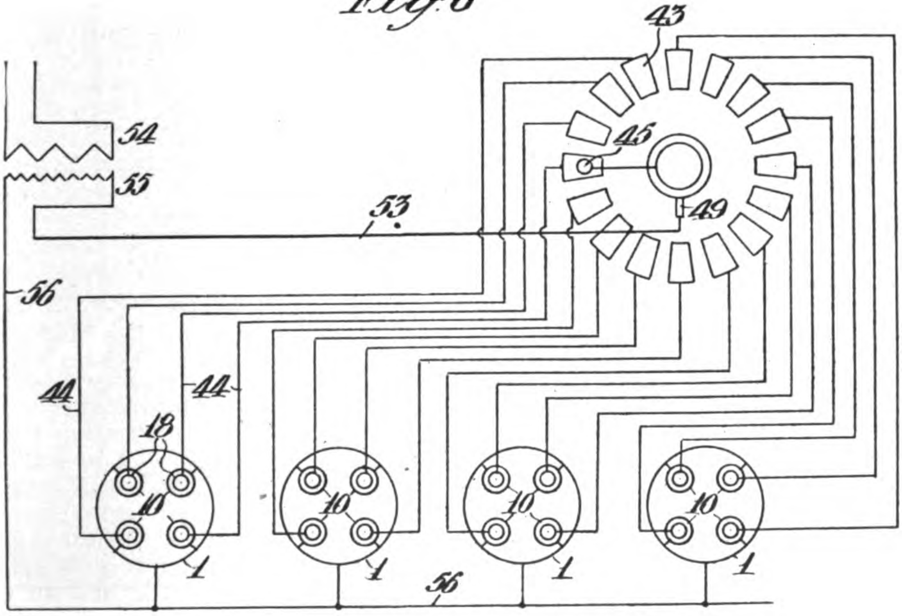


Fig. 6



are connected in groups all the work is done in the treater having the lowest initial resistance, the other treaters being idle due to insufficient voltage.

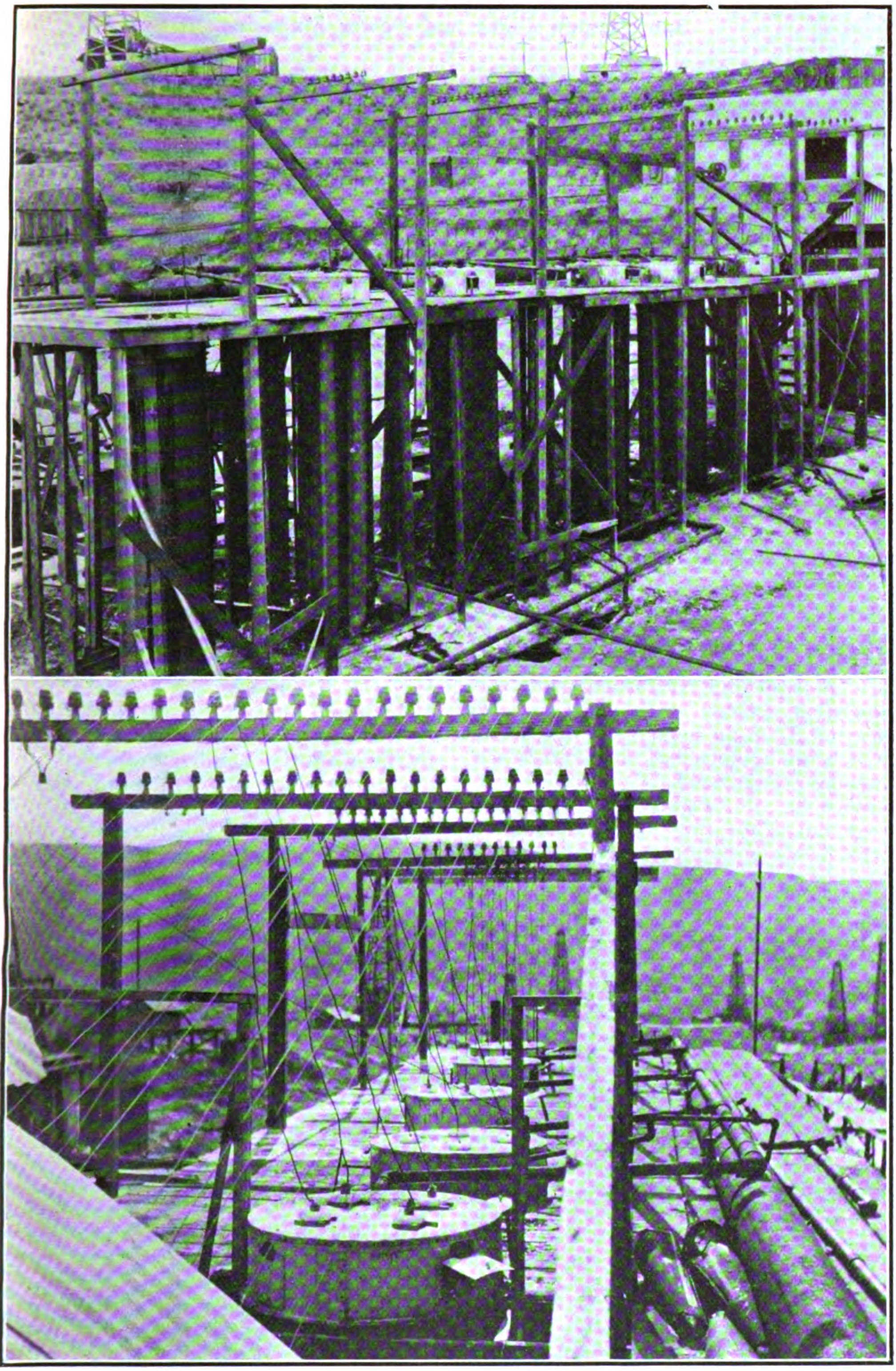
A further object of the invention is to provide a distributer which will impress the high voltage on one treater at a time and which will allow sufficient time intervals in each treater between treatments to allow the freed water to coalesce into large globules.

The invention consists of a process for producing and maintaining heavy short-circuit currents through an emulsion. The source of supply is made strong enough to cause such currents to flow even through widely variable qualities of emulsion and strong enough to hold the short-circuit until broken by means external to the treater, even if caused in a moving emulsion. It is widely different from any process in which a critical voltage is applied, this critical voltage being strong enough to start a flow of current from electrode to electrode but not sufficiently strong to maintain the flow as the emulsion is twisted or the electrode is moved. One of the principal reasons for the high efficiency of the process is the positive nature of the short-circuit currents which are impressed upon the oil.

The invention further consists of a process in which the emulsion moves upwardly between the electrodes which have a suitable electrical potential difference maintained on them. This upward movement of the emulsion results in a natural separation of the cleaned oil from the water which in a great measure settles out and is removed from the bottom of the treater. The small portion of free water that is carried over with the oil is subsequently removed in a special form of separator.

Referring to the drawings on pages 238 and 239, which are for illustrative purposes only: Figure 1 is a plan view of a treater and a separator. Figure 2 is a partial section on the plane x2-x2 of Figure 1. Figure 3 is a section on the plane x3-x3 of Figure 2. Figure 4 is an end view of the interrupter and distributer. Figure 5 is a partial section on the plane x4-x4 of Figure 4. Figure 6 is a diagram of connections.

The invention broadly considered consists of a treater 1, a separator 2, and a distributing interrupter 3. The treater consists of a cylindrical outer shell 4 having a tight bottom 5 and a top 6 provided with gas relief apertures 7 which may be closed by suitable doors 8. A pan 9 is tightly secured in the top of the shell 1. Four cylindrical outer electrodes 10 are tightly secured in openings 11 formed in the pan 9 extending downwardly and having their lower ends secured in four openings 12 formed in a dividing plate 13. The pan 9 and the plate 13 divide the interior of the treater into three chambers, an upper chamber 14, a central chamber 15, and a lower chamber 16. The outer electrodes 10 form open passages between the chambers 14 and 16, passing through the chamber 15. Supported in insulators 17 on the top 6 are four inner electrodes 18, each of these electrodes extending downwardly through the center of one of the outer electrodes 10. A series of points 19 project outwardly from the inner electrodes 18 and a similar series of points 20 project inwardly from the outer electrodes 10. The plate 13 is provided with four holes 21 which provide an open communication between the chambers 15 and 16. A series of heating coils 22 are provided in the chamber 15, being fed with steam or other heated fluid from a source not shown. A central outlet pipe 23 extends upwardly through the bottom 5 through the plate 13 and through the pan 9, forming a tight closure with all these parts and extending upwardly as shown at 24 inside the pan 9. This pipe 23 communicates through a valve 25 with the separator 2. A water outlet pipe 26 is provided in open communication with the bottom of the treater. This water outlet pipe is extended downwardly to a considerable distance below the treater and connects with a vertical pipe 261, which extends upwardly and communicates through a T 262 and an elbow 263 with a movable pipe 264.



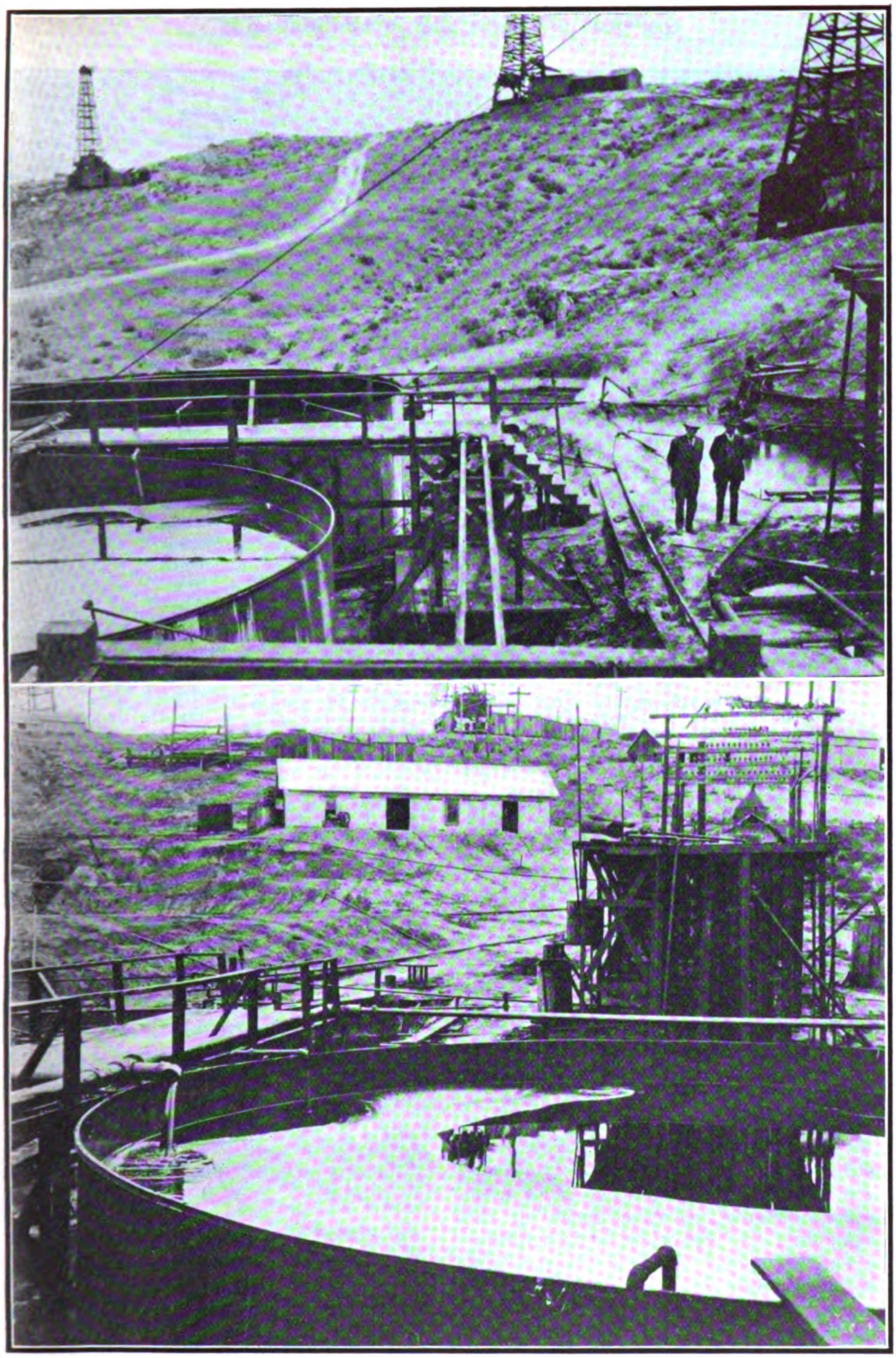
The upper view shows the arrangement of the treaters and wiring to the corrugated iron structure which houses the electrical apparatus. The lower view shows the method of connection and insulation of the treaters and also the system of oil feed pipes. The corrugated iron roof appearing in the left-hand corner is of the same building shown in the upper view.

The separator 2 consists of a tight tank 27 provided with a bottom 28 and with an inlet pipe 29 which is in open communication with the pipe 23 through the valve 25. A series of wooden lath members 30 are provided in the separating tank for the purpose of collecting and trapping that portion of the free water which passes into the separator 27 with the oil from the treater 1. An outlet pipe 31 is provided for drawing off the cleaned oil from the separator and an outlet pipe 32 is provided for drawing off the water from the separator. A blow-out pipe 34 is provided on the separator 2 to admit water or steam for the purpose of cleaning the interior of the separator.

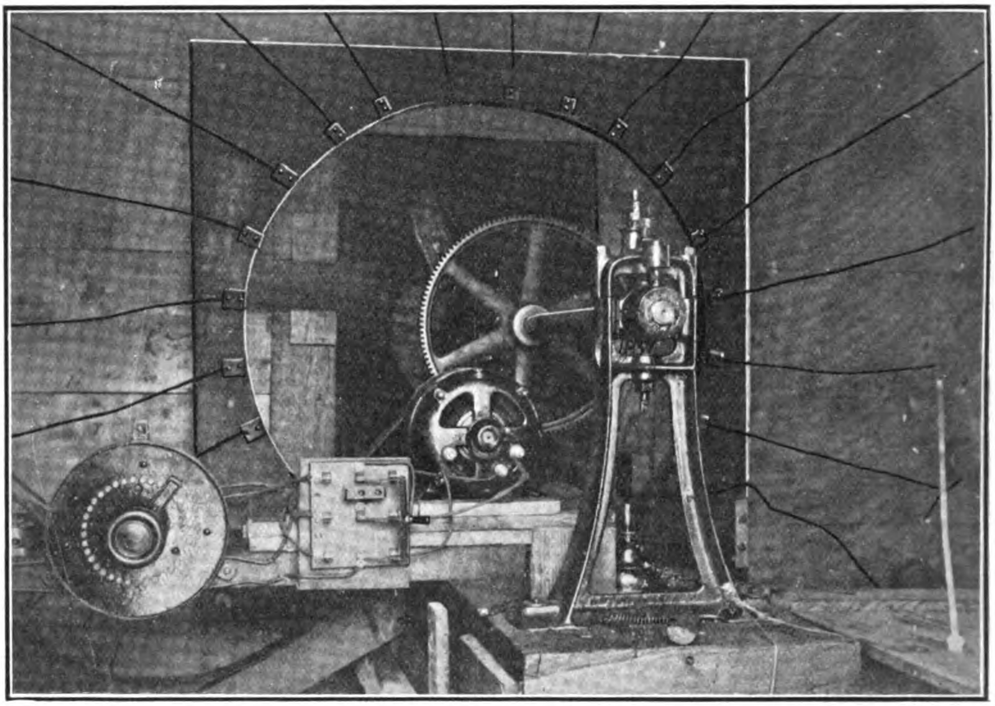
The interrupter 3, showns in Figures 4 and 5, consists of a shaft 35 turning in bearings 36 and 37 formed on a bed plate 38 and driven by a gear 39 which is driven by a pinion 40 on the shaft of a motor 41 which may be driven from any convenient source of electrical energy. Mounted on the bearing 37 in an insulating plate 42 on which are mounted a plurality of stationary contacts 43 each connected to a wire 44. A rotating brush 45 is carried on a rotating brush holder 46 which is formed integral with a sleeve 47. The sleeve 47 is carried on an insulating bushing 48 mounted on the shaft 35. A stationary brush 49 presses against the sleeve 47 being carried in a brush holder 50 supported on a brush holder stud 51 provided with suitable insulation 52 and connected to a wire 53.

The method of connecting the apparatus is shown in Figure 6. A transformer is provided having a primary winding 54 and a secondary winding 55. One side of the secondary winding 55 connects through the wire 53 with the stationary brush 49. The other side of the secondary winding 55 connects through a wire 56 with the tanks 1, each of these tanks being connected to the outer electrodes 10. Each of the inner electrodes 18 is connected through a wire 44 with one of the segments 43 on the insulating plate 42. One of these segments is connected through the brush 45 and the sleeve 47 with the wire 53. As the shaft 35 is rotated an electrical potential is impressed on each pair of inner and outer electrodes in turn, the current flowing from the secondary 55 through the wire 53 to the brush 49 and into the sleeve 47. From the sleeve 47 it flows through the brush 45 to one of the segments 43 and from the segment 43 through the brush 44 to an inner electrode 18. The current then flows through the emulsion to one of the outer electrodes 10 and from thence through the wire 56 back to the other side of the secondary 55.

The method of operation of the invention is as follows: Emulsion is admitted to the treater 1 through an inlet pipe 57 into the top of the chamber 15 just below the pan 9. This emulsion flows downwardly through the chamber 15, being acted upon if desired by the heating coils 22 and passing out of the chamber 15 into the chamber 16 through the holes 21. We have found that the natural tendency of the free water to settle is assisted by heating the emulsion, thereby reducing its viscosity. Only the heavier oils needs to be so heated. The emulsion then rises through the outer electrodes 10 and between the points 19 and 20 formed on the outer and inner electrodes. When an electrical potential exists between these electrodes an electric field is set up and the particles of trapped water arrange themselves in chains between the electrodes. The potential is maintained sufficiently high to positively cause a puncturing of the oil between the different particles so that there is a coalescence of the various water particles into one long, practically continuous, chain of water . The speed of the shaft 35 is made such that the current is allowed to flow for a considerable interval after this chain is formed and a thorough coalescence takes place. The current is then interrupted for a longer period by the movement of the brush 45 and the chain forms one or more large water globules which drop through the moving body of emulsion into the chamber 16. As the water



Upper view shows the delivery of cleaned oil and separated water from the plant. The oil is flowing into the tank in the left foreground, while the water goes into the small tank in the lower right-hand corner of the picture. The lower view shows the stream of pure oil coming from the treaters in the background.



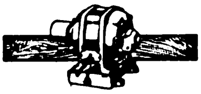
View of the interrupting distributer which supplies the current to the treaters. The transformers and condensers, through which the current passes before going to the distributer, would be in the lower right-hand corner were they shown in the picture.

globules pass downwardly they collect many small particles of trapped water which they coalesce with to form larger bodies of free water. The length of the pipes 26 and 261 is made such that the movable column of oil in the treater and a column of water in the pipe 26 are exactly balanced by a column of water in the pipe 261. Whenever water collects in the chamber 16 the weight in the treater and the pipe 26 exceeds the weight in the pipe 261 and water flows from the pipe 26 into the pipe 261 until a balanced condition exists. The pipe 264 is turned to adjust the vertical height of the column in the pipe 261 so that the water level for a balanced condition will be low in the chamber 16 or even a considerable distance down in the pipe 26. In practice a continuous stream of water flows from the pipe 264, thus relieving the chamber 16 of free water. A small proportion of the smaller water globules and a small percentage of emulsion may be carried upwardly with the rising stream of cleaned oil and the mixture is delivered to the pan 9, the liquid in this pan consisting almost wholly of cleaned oil. This oil and small proportion of water passes downwardly through the pipe 23 through the valve 25 and the pipe 29 into the bottom of the separator 27, rising slowly through the lath members 30 which have previously been thoroughly wetted with water. The large surface presented by the lath members catches and retains the small proportion of free water in the mixture, and this water trickles down into the bottom of the separator 2 and is withdrawn through the pipe 32, the cleaned oil practically free from emulsion passing outwardly through the pipe 31.

The cost of current for dehydrating oil by this process will vary, of course, with the cost of power and with the characteristics of the oil. Broadly speaking, it should not exceed one-quarter of a cent per barrel, and it may fall considerably lower where power is cheap or the treatment need not be so thorough.

For example, at the plant of the Traders' Oil Company, in Midway, six treaters operating over a period of five months show cost as above treating oil containing from 48 to 60 per cent emulsion. Power at this plant was charged for at the rate of 6 cents for the first 45 K. W. H. and 1½ cents thereafter. The six treaters at this plant have a 97 per cent leading power factor and a maximum demand of 4½ K. W. In the five and one-half months operation there has been no maintenance expense other than the power. It is possible that after about a year's operation that some of the insulators or some of the electrodes will have to be renewed, but it is estimated that the cost of keeping a six-treater plant in repair will not exceed $20 per year.

The amount of heat required depends entirely on the gravity of the oil. Thirteen degree gravity oil is heated to twenty-five degree gravity in order to allow the water to settle out freely. At this plant no additional labor is required. The system is absolutely positive, no matter how many times or when the plant is shut down it will go to work when started again the same as if it had never been disturbed. The plant is started or stopped whenever desired on extremely short notice .



Electrical Process Purifies Oil Sump Water for Use in Boilers

L. P. Guiberson, superintendent of the Indian and Colonial Development Company, Midway, and his electrician, L. T. Gay, have patented a device for using sump water in boilers without its boiling over, caking or causing other troubles so familiar to field workers. To purify the water by electricity is the basis of their plan. The water comes from the treatment as clear as crystal.

The treater which is being used is constructed in such a manner that the water runs through an electrode which is operated by a generator which transforms the San Joaquin Light and Power Company's alternating current to direct current. Though the water may go into the treater filled with impurities, the electricity removes all foreign matter.

Following its being treated the water is turned direct to the boilers, where it has been found free from any tendency to foam. Boilers using this treated water are now cleaned every 32 days instead of every 10 days to two weeks.

This treating plant can be built for less than $1000 other than the erecting of a settling tank, which is to be had on most leases without it being necessary to make a purchase.

Guiberson and Gay undertook this work as a result of the great difficulty encountered in the matter of getting water for the Indian and Colonial Development Company lease's boilers. The water obtained on the land is heavily impregnated with mineral, oil and shale. Ten days of its use and the boilers are unfit for use until cleaned, a solid cake like asphalt being formed. The purchase of water ran the company's bills up to $200 a month. Guiberson now thinks $20 will cover a month's cost of water to the company, in addition to about $1 a day for electricity.

"How the Swedes Made a Country"--History of the Beginning of Kingsburg

(Probably no territory in the west represents a higher type of colonization and degree of development than the district surrounding Kingsburg, in the southern part of Fresno County. Residents of this favored locality and persons talking with a knowledge of its history proudly assert, "The Swedes made this country," for Kingsburg is a Swedish community in the sense that most of the people are of that descent originally. Under the auspices of Mr. Howard Sharp, a newspaperman of Kingsburg, the Kingsburg Recorder recently issued a most creditable Scandinavian Special Edition in which appeared the most thorough and authentic history of this remarkable colony that has yet been published.)

By HOWARD SHARP

AS INDICATED by their family names and by other facts and circumstances, seventy per cent of the people residing in the Kingsburg district are Swedes or are of Swedish descent. There are more Swedish people in Kingsburg, and the proportion to population is greater, than in any other city or district in California. Kingsburg is unquestionably the chief Swedish colony in California.

Unlike several of the states of the northwest and the middle west, California is not distinguished for a large Swedish population. Five other nationalities exceed the Swedish in the proportion to the total of the state's population. There has never been a concerted effort on a large scale to attract Scandinavian people to this state. How it came about that a purely "American" community secured such a large Swedish population is an interesting story—interesting alike to the Swedish people in Kingsburg and elsewhere and to Americans who desire that the population of their communities be increased by the incoming of Swedish settlers.

To Frank D. Rosendahl more than to any other person is due the credit for establishing Kingsburg as the chief Swedish colony in California. This honor is accorded him by everyone. He was the first Swede to visit Fresno County with a view to locating, the first to buy land in the county, and, with Charles Erickson, the first to take up residence here. By rare good fortune he was a nurseryman, with experience that fitted with California conditions, and was thus enabled to adapt himself to and cope successfully with, the peculiar conditions encountered by the early settlers from the east unacquainted with vineyard and orchard cultivation.

Mr. Rosendahl is still a resident of Kingsburg. He is the justice of the peace for the ninth judicial township of Fresno County, and has held that office for nine years. By virtue of his position he is popularly addressed as "Judge," and it is by that name and title he is best known to us. Born in Sweden, June 5, 1843, a common school education was supplemented by a course in landscape gardening and surveying at Rosendahl College, a line of work in which he displayed such adeptness that he was engaged to lay out the city park in Umeo, Sweden. But Mr. Rosendahl did not remain long in Sweden after completing his course in the college. He came to the United States in 1868, and for seven years was engaged as a division landscape gardener in Central Park of New York City.

The impulse that led him to leave New York City in March, 1875, was responsible for the most marked change Kingsburg ever experienced. Arriving in San Francisco in April, 1875, with his father, Henry Rosendahl, who had come to the United States six years before, he sought and obtained employment in Golden Gate Park. The trip to the coast from New

York was made by way of the Isthmus of Panama.

It was in the days before anything was known of the grasses which are now used to make grass plots, and the job of converting the sand dunes of Golden Gate Park into an attractive place was a big undertaking.

With his knowledge of trees it was natural that Mr. Rosendahl should go into the nursery business, Oakland becoming his place of residence after a year spent in San Francisco.

In 1875 six sections of land in Fresno County were subdivided into twenty-acre and forty-acre tracts and offered for sale under the name of the Central California Colony. The venture was a success.

A real estate promotion enterprise of similar character was Washington Colony, a tract of four sections south of the Central California Colony, similarly subdivided, and put on the market in 1878. The promoters of the enterprise were J. P. Whitney, Wendall Easton, and A. T. Covell. A townsite was laid out and given the name of Covell, and a postoffice was established under that name, but the name of the town was subsequently changed to Easton and by the latter name the place is still known.

Vines and fruit trees had been planted on the land of the Central California Colony as early as 1874 and the adaptability of this portion of Fresno County for grapes and peaches was amply demonstrated.

Advertisements of the new subdivision, Washington Colony, attracted Mr. Rosendahl's attention as soon as announcement of its opening was made in 1878, and in the summer of that year he joined an excursion party from San Francisco and Oakland to investigate it. To all of the other members of the party the property looked very unattractive; so little taken with it were they that Mr. Rosendahl was the only person in the party who made a purchase at that time. Expecting the heavier soil to be the better, he bought a twenty-acre tract along the irrigation canal and adjoining the site of the proposed town of Covell, named after a member of the firm. Afterwards he learned that the sandy soil was the better, but he had the satisfaction later of seeing purchases of land made by persons who as parties of the original excursion had laughed at him for buying land there.

Returning to Oakland, Mr. Rosendahl reported on the land to his friend, Charles Erickson, and on his advice Mr. Erickson bought a twenty-acre tract in Washington Colony without first seeing it. Mr. Erickson still lives on that place, to which he added another twenty acres in 1881. Mr. Rosendahl and Mr. Erickson each bought a team of horses in Oakland, and in September, 1878, with the four horses to a wagon, they and Mr. Rosendahl's father, drove through to Easton Colony to begin improvements on their farms. Mr. Erickson had been a coachman in Oakland; he was a good horseman, whereas Mr. Rosendahl says he had never harnessed a horse; accordingly Mr. Erickson did the driving.

As Mr. Erickson recalls it, a Dane, J. P. Mueller, had arrived at the colony the day before he and Mr. Rosendahl got there; Mr. Rosendahl says merely that some Danes arrived the same fall. A blacksmith, Lindstrom of San Francisco, whose family still lives at Easton, arrived shortly after; other early arrivals were the Thieles, the Almgrens, Wass, Axel Carlson, Johnsons and Jonason.

When Rosendahl and Erickson arrived there was only one house on the colony land, that being the house of the superintendent of the property. Soon thereafter was erected the dairy building of the Baird brothers. For the first houses subsequently built after their arrival Mr. Erickson hauled the lumber from the mountains. As the settlers arrived most of them stopped temporarily with Erickson or Rosendahl. Many of the settlers in Washington Colony were Swedes or Danes, and it was from Easton that developed the Scandinavian settlements at Kingsburg, Selma, Reedley and elsewhere.

Mr. Rosendahl continued in Washington Colony the nursery business he began in Oakland, and the twenty acres being insufficient for the purposes of the business, he rented several tracts of land. Rather than continue renting land, he traded his Washington Colony improved place for a quarter section of land near Kingsburg then given over to grain farming, and in 1885 moved to Kingsburg. The trade was made with S. E. Moffitt, who by the statements of the old residents of Kingsburg, was a good writer and a pretty good newspaper man but a mighty poor farmer. Judge Rosendahl speaks in terms of the highest praise of Moffitt's learning and honesty, but he confesses that Moffitt was not fitted for farming. It is said of Moffitt that he spent the larger part of his time in the preparation of articles for the press and in reading, and that he would go into the fields and stop the men from their plowing to read to them articles that struck his fancy. H. L. Bishop, postmaster of Kingsburg, now occupies the residence built by Moffitt; "it was a library, but was used for a residence," says Mr. Bishop.

Mr. Rosendahl set out trees and vines on the quarter section that had been used for grain and brought it to a high state of improvement. It was one of the best developed tracts in the state, and was the show place between San Francisco and Los Angeles.

From the first, after taking up residence in Fresno County, Judge Rosendahl was indefatigable in promoting increased immigration and higher improvement, and he wrote hundreds of letters setting out the advantages of this section and the opportunities afforded in fruit culture. One of the persons to whom he wrote was his cousin, C. A. Johnson, then a resident of Ishpeming, Michigan, an iron mining city, where many Swedish people were employed. The nature of the work and the severity of the climate combined to prompt some of the Ishpeming men to look about for another location. They had read of government land in the west open for homestead entry, and in the summer of 1886 about a dozen of them organized informally to pool the expense of a representative to visit the west, look over the country, examine the soil and other conditions, and make a report. A meeting was held one night in June of 1886 at the home of one of the number, P. G. Hero, a carpenter employed by one of the mining companies. The subject was under discussion when C. A. Johnson was called upon to say what he thought of it. "Well, as for me, gentlemen," he said, "I shall not wait for the report of the committee. I'm going to start for California tomorrow."

At the meeting at Mr. Hero's house Andrew Erikson was selected as the representative of the society to go out west and look for desirable land.

Mr. Johnson left Ishpeming for California as he planned, and came to Kingsburg. Here he took employment with Davis Brothers, general merchants, who conducted the largest establishment in the town. He had come here on the advice of Mr. Rosendahl, and he obtained employment in the Davis Brothers' store because he had had mercantile experience in Michigan. Mr. Johnson had been in Kingsburg only a few weeks when Mr. Rosendahl came to him and proposed that they go to Los Angeles, where the latter wanted to buy nursery stock. "It was in August and it was awfully hot and dusty, and I was mighty lonesome," says Mr. Johnson. The expense of the trip would be such that he hesitated, "but it was in August, and it was awfully hot and dusty, and I was mighty lonesome," Mr. Johnson repeats, in relating the incident, so he made the trip to Los Angeles. At San Pedro they boarded a vessel for San Francisco, where Mr. Rosendahl was to transact other business before returning home. Already, at that time, the Santa Clara Valley was developed into an attractive section, and there was a Swedish settlement there. In order that Mr. Johnson might see that valley, they got off of the boat at Santa Cruz and went to San Jose before reaching San Francisco. While walking the streets of San Jose, viewing the city, they noticed a small frame church on the other side of the street, and because a group of ladies stood on

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the sidewalk in front of them, they crossed the street to avoid the ladies and go to the church to learn of what denomination it was. A man sat on the steps of the church, and the man was Mr. Johnson's work partner, Andrew Erikson, the delegate of the Ishpeming society. There Mr. Erikson and Mr. Rosendahl met for the first time.

Arriving in San Francisco, Mr. Erikson had called at the government land office and had been directed to the southern part of Monterey County. He was on his way to Monterey County when he stopped at San Jose, which he knew to contain a Swedish colony and where he desired to meet the pastor of the Swedish Lutheran Church.

Mr. Rosendahl and Mr. Johnson urged Mr. Erikson to visit Kingsburg before he returned to Michigan to make his report. Mr. Erikson agreed to do so, and proceeded on his trip, coming to Kingsburg a few weeks later. After leaving Kingsburg and before he returned to Ishpeming, Mr. Erikson visited other parts of the state, looking for government land, but the absence of irrigation and the difficulty and expense of getting water onto such government land as was open to homestead led him to the conclusion that fruit farming on small tracts in Fresno County was the best proposition. He took with him to Michigan samples of the soil and some specimens of alfalfa, a plant of which the Michigan people had never heard before.

Mr. Johnson wrote to his old friends in Ishpeming, also giving a description of the country and advising them to come here.

It was on June 25, 1886, that C. A. Johnson had arrived in Kingsburg; before the close of November Andrew Erikson and family, P. G. Hero and family, Charles Berg and Carl Carlson had arrived in Kingsburg from Ishpeming to locate. There were no tracts of land for sale in smaller bodies than a quarter of a section and to accommodate the newcomers, A. A. Smith, a real estate man of Kingsburg, bought one hundred and sixty acres and subdivided it. Messrs. Erikson and Hero each took forty acres, being the tracts on which they now have their homes; Noack Anderson took a forty, and Carl Carlson bought forty acres for himself and Nils Hanson and Charles Berg took a forty elsewhere. The Carlson tract constitutes what is now known as "Nob Hill," where is located the present high school. The forty acres bought by Charles Berg is now owned by Adolph Anderson. Carlson, then a single man, later sold his interest to Mr. Hanson, and made a trip to Sweden where he married. After his return to Kingsburg he was accidentally killed.

The 160 acres thus subdivided was sold at $40 an acre. One particular ten-acre piece that was put in trees sold two years later for $150 an acre. The only other improvement on it was a cabin 12x12.

Among the other Ishpeming people who came to Kingsburg within a year or two after the arrival of the first settlers from Michigan in 1886, were Carl John Peterson, Nils Anderson, Sailor John Anderson, P. A. Whitgren, Chas. G. Erickson, Noack Anderson, Peter Anderson, I. Peterson, Lars Anderson and Erick Peterson.

By 1890 Kingsburg was being recognized everywhere as a Swedish community. A history of Central California issued in that year has this sentence in the course of an article on Kingsburg: "The Kingsburg colony is mainly settled by Swedes." But the colony must have been a small one, even counting all classes of population. The town was not incorporated, and its population at this time is not reported officially, but the History of Central California estimated it at 500. That was a very generous estimate; 300 probably would be more accurate.

In the sheriff's office at Fresno is an atlas that shows the subdivisions of land and the names of the owners in 1891. In some cases only the surnames are given on the map, the given name being omitted. We omit the names of persons already referred to in this artocle as having settled here, and give the following as names obtained from the atlas of persons of Scandinavian descent who owned land near Kingsburg in 1891:

J. Danielson, N. Soderland, Z. N. Soderland, J. Martinson, G. P. Nord, Wm. Poulson, W. E. Hagberg, J. R. Andrews, C. O. R. Carlson, T. A. Nelson, D. Kestrum, H. Sundberg, John Olson, C. G. Johnson, Wicklund and O. Borg. To be sure, this list is not complete; not all of the persons shown as owning land were residing here, some of them having bought land intending to come out later, and there were Swedish farmers on land for which they had not yet obtained the deeds or recorded the deeds.

Of the members of the little organization effected in 1886 at Ishpeming, Michigan, to find homes in the west, practically all of them located in Kingsburg, if not in 1887, then later. A few of the original members of the society went to Southern Michigan, but they returned to Ishpeming. Not only did most of the members of the society come to Kingsburg, but other Ishpeming people came as well.

The subsequent settlers came from all of the states of the middle west —the Dakotas, Minnesota, Kansas, Nebraska, Iowa and Illinois. Very few settlers came to Kingsburg direct from Sweden; most of the Swedish settlers were of American birth.

All of the early settlers who remained here have done well and are thankful for the chance that lead them to California. As related elsewhere, some of the first comers got discouraged and dissatisfied, but they would have become so wherever they might have located.

We shall not attempt a record of the experiences of the early settlers, but it is impossible to avoid reference to the case of John Anderson, who because of his earlier occupation is popularly known as "Sailor" Anderson. Mr. Anderson and wife came here in 1887 and bought the six acres of land which has been their home ever since. On that six acres they have made a living for more than a quarter of a century. One acre of the six was straightaway planted to alfalfa; then three acres of vines were set out, the balance (two acres) being planted to apricots and peaches. Not only have Mr. and Mrs. Anderson made a good living there, while the value of their six acres was being increased, but it is commonly known that Mr. Anderson always has money to loan.

The history of the Kingsburg Swedish colony from 1890 to this year of 1915 is largely the history of the Swedish churches, which in that period grew from two small and struggling organizations to six congregations, each with a large membership.

While the Swedish population was growing, the American population was increasing also. The presence of the Swedish people has never deterred other people from coming in, rather it has led Americans to come, for the Swedish people are everywhere recognized as being splendid neighbors and good citizens. The Swedish churches have not grown at the expense of the American; the South Methodist Church is firmly settled and thriving, and the erection of the finest church edifice in town by the First Methodist congregation proves that the success and prosperity of the other denominations has not been jeopardized.

It is very difficult to estimate the number of persons of Scandinavian descent. The United States census shows the number of foreign born and the number of natives whose parents were foreign born, but there is no record of the number of residents only one of whose parents was foreign born or of the succeeding generations. However, here are the figures from the United States census of 1910. These figures are so old as not to have much value, but they are given for what they may be worth:

Fresno County

Foreign born—	
Born in Denmark	1421
Born in Norway	136
Born in Sweden	1228
Native born—	
Both parents born in	
Denmark	1072
Norway	113
Sweden	1334

Tulare County

Foreign born—	
Born in Denmark	71
Born in Norway	28
Born in Sweden	279
Native born—	
Parents born in	
Denmark	38
Norway	21
Sweden	266

Kings County

Foreign born—	
Born in Denmark	24
Born in Norway	28
Born in Sweden	66
Native born—	
Parents born in	
Denmark	16
Sweden	49
Norway	3

The total of all of the above figures is 6,193. In the five years since the census of 1910 there has been a large movement of Scandinavian people into the three counties named above.

Next to Fresno County, Stanislaus is the point of largest Scandinavian population in the valleys of the state.

Increasing Crop Yield by Electricity

The problem of feeding Europe is to be partly solved in the near future by methods recently discovered for increasing the production of food through the utilization of electricity in agriculture.

It has just been announced that England will turn all her grazing lands into wheat fields bearing crops for the next harvest. One large English land owner has already demonstrated on his own farms the possibility of making every acre yield an increase of at least 40 per cent over its ordinary crop by electroculture. When the English grazing lands are growing wheat by electricity-aided agriculture, England need fear no shortage of bread, either for her soldiers in the field or their families left at home.

The scientists of every country are experimenting with a view to increasing the value of electroculture to the farmer and gardener, and at least half a dozen methods of applying electric current to food production are adding daily to the world's supply. Sir Oliver Lodge has been especially interested in increasing the wheat supply, and the electrical farm apparatus of his invention is believed to minimize both expenditure and labor. He has demonstrated, where electric service is not possible to be obtained, that a two-horse power oil engine can drive a dynamo capable of supplying ample electricity for fertilizing an 18-acre wheat field.

The electricity is conducted through wires charged positively stretched across the field high enough not to interfere with walking under them, and by negative wires connected with the earth. The two kinds of electricity, positive and negative, strive to meet, causing a discharge of electricity between the overhead wires and the ground, which stimulates the growth of the crops.

The good effect of electricity upon the soil is due to its nitratizing influence. Every farmer knows the value of nitrate as a fertilizer. While it may be applied directly, electricity is helping food production indirectly by producing, in larger quantities than ever before, such substances as calcium hydrates, better known as nitrolin. The development of these products through electro-chemistry has already gone far to fill the deficit of the failing supply of Chilean saltpeter. The great electro-chemical plant at Niagara Falls is producing unheard of supplies of these products, as if in answer to the query, "When the wheat crop fails, what——"?

In Germany and other countries having much natural water power, great electro-chemical laboratories are adding these fertilizers to the farmer's resources—Exchange.

The Feeding and Care of Dairy Calves

Prepared in the Dairy Division of the Bureau of Animal Husbandry, United States Department of Agriculture

The feeding of the dairy calf should begin before it is born. Too many dairymen practice very scant feeding of pregnant dry cows, and as a result weak, puny calves are dropped which from birth are handicapped in their development and are difficult to feed and care for. It is false economy for any dairyman to withhold feed from a cow under such circumstances, as this is likely to affect unfavorably the future welfare of the calf as well as later milk production by the cow. While the demands upon the cow at this time are perhaps not quite so great as when in full milk production, there is nevertheless a severe strain upon her and she should be fed liberally so as to be able to produce a strong, well-developed calf and so that she may be in good condition to give a large flow of milk.

In nature the calf sucks the cow until it can support itself. In modern dairy farming, however, the value of butterfat and whole milk forces the dairyman to separate the calf from the cow soon after birth. The milk produced by the cow for the first few days (colostrum) has properties which put the calf's digestive system in good working order. It is therefore necessary that the newly-born calf have this milk. It is a good practice to let the calf suck the cow for about 48 hours after birth, but if weak and poorly developed it may be well to let it suck for several days to gain more strength.

The longer a calf remains with the cow the harder it is to teach it to drink, but it is usually a simple matter to teach a good robust calf to drink if taken when not more than two days old. Before this is attempted the calf should be kept from the cow for about 12 hours; it will then be very hungry. About two quarts of its mother's milk, fresh and warm, should be put into a clean pail and held in front of the calf, which will sometimes put its nose into the pail and drink without coaxing. In most cases, however, it will be necessary to let the calf suck the fingers and by this means gradually draw its nose into the milk. The fingers should be removed carefully as soon as the calf gets a taste of the milk. It will oftentimes take its nose out of the milk in a few seconds, and if so the operation will have to be repeated. Patience is necessary. Usually, after the second or third feeding, the calf will drink alone. Occasionally a calf is stubborn and its nose has to be forced into the pail; in such cases it should be straddled and backed into a corner. The nose is then grasped with one hand, two fingers being placed in the mouth, and the nose forced into the milk, when the calf, by sucking the fingers, will draw the milk up into its mouth. The fingers should be gradually removed and this operation repeated until the calf will drink alone.

When a calf is young it is best to feed it three times a day, as nearly eight hours apart as possible; but many successful feeders feed only twice a day. The calf must be fed regularly and in equal quantities. It is impossible to give a rule which will apply to all cases, for some calves have greater appetites than others, grow faster, and therefore should have more milk. The working capacity of the stomach of the calf is small, and during the first few weeks more troubles are caused by feeding too much milk than by feeding too little. As a rough guide to the inexperienced feeder the following is suggested:

First week. Feed a 60-pound calf four quarts a day of its mother's milk, warm from the cow.

Second week. If no digestive trouble appears and the calf is thrifty, increase the feed to five or six quarts of whole milk a day. This does not need to be its mother's milk.

Third week. Feed as for second week, except that one quart of skim milk is substituted for one quart of the whole milk.

Fourth week. Same as third week except that one-half of the milk should be skim milk and one-half whole milk.

When the calf is one month old it may receive all skim milk provided it is thrifty. The amounts can be increased gradually until it is three months of age when it should be taking eight or ten quarts a day.

The foregoing rule for feeding applies only to a calf weighing about 60 pounds at birth. It may be varied according to weight and the vigor of the calf. Experience will soon teach the feeder how to vary the amounts. Larger calves will need a little more milk. When skim milk is used instead of whole milk some feeders attempt to feed more of it, because they think that the extra amount given will compensate for the loss of the fat. This is entirely wrong. No more skim milk should be fed than if the whole milk were used, but the fat removed from the milk should be replaced by grain, as is pointed out in another paragraph.

While the calves are young the milk should be heated to blood heat (90 to 100 degrees F.). When two or three months of age calves will do well on cold milk, provided it is of the same temperature, or practically so, at each feeding. The important thing is that the milk be of the same temperature at each feeding. Dirty or old milk should not be given.

A little grain should be fed as soon as skim-milk feeding begins, in order to replace the butter fat removed in the cream. Two parts, by weight, of cracked corn and one of wheat bran make a good grain mixture which every farmer can readily secure and requires no special preparation. The calf should be taught to eat this grain by sprinkling a little of it in the feed box right after feeding the milk. No more grain should be fed than the calf will clean up readily.

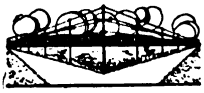
The calf should be supplied with plenty of roughage, preferably clover, alfalfa, or pea-vine hay; but if these are not available, mixed hay, bright corn fodder, or shucks may be used. This roughage should be kept before the calves in a rack or a box where it can be kept clean and fresh by renewing each day. The calf, when it is a week old, will begin to pick at this, and at one month of age will be taking a considerable amount. As in feeding grain, cleanliness is of great importance.

The calf will do well on pasture, and if this can be provided convenient to the buildings he will be able to get the greatest part of his roughage in this way.

Cleanliness is one of the most important factors in feeding young calves. Clean feeding pails, troughs, and stalls are safeguards against any digestive troubles. Milk should be fed only in clean pails, which should be washed and scalded after each feeding. All feed boxes should be kept clean. Special care should be taken to prevent meal from fermenting in the corners of boxes. Fermented or moldy feed will often upset the digestive system of a calf and endanger its life. No more grain should be fed than will be cleaned up in a few minutes. The bedding in calf stalls becomes wet very quickly. The calf should by all means be kept dry, and it is therefore necessary to keep the stalls well bedded at all times.

The principal difficulty in raising calves is scours. This trouble is usually due to mistakes in feeding—dirty milk, dirty pails, sour milk, fermented grain, irregular feeding, overfeeding; almost any mistake in feeding is liable to bring about this trouble. The first thing to be done in such cases is to reduce the feed about one-half and see that it is fresh and clean in every respect. Oftentimes this will be all that is necessary, and then the calf can be gradually brought back to full feed. It the trouble is serious and persistent, give the calf two to four tablespoonfuls of castor oil in milk as a physic, and two to three times daily a mixture of one part salol and two parts subnitrate of bismuth in doses of one to two teaspoonfuls, depending upon the severity of the case and the size of the calf. If scours is general and persistent, it will be well also to disinfect the calf stalls with compound solution of cresol, or some other good disinfectant. (See Farmers' Bulletin 480, "Practical Methods of Disinfecting Stables," which may be obtained from the Department of Agriculture, Washington, D. C.)

If calves begin to scour in one or two days after birth and the discharge is white, acute contagious scouring is probably the trouble and will require the most thorough disinfection and the prompt services of a competent veterinarian.



Alfalfa Expert Gives Views on Most Efficient Method of Feeding Dairy Cattle

(Porterville Messenger)

In line with recent editorial comment which has been appearing in The Messenger with regard to the alfalfa property of this district to the general effect that the owners of this land are securing only a small proportion of the income of which their land is capable, W. E. Premo, one of the best informed and most practical alfalfa growers of this district, declares that a substantial increase can be made in income by feeding dairy animals cut alfalfa rather than using the land for pasturage.

According to Premo the ranches of this district do not, on the average, support more than one cow to each two acres of alfalfa. This is considering the fact that when alfalfa land is used for pasturage it will probably run out at a rapid rate. On the other hand, it has been shown in other alfalfa districts where this system has been worked out in detail that if cut alfalfa is used and the field used for pasturage only for a short time in the fall there is ample feed for one cow to each acre.

This means almost a double income from the property, over that which is being secured, on an average, in this district. It can be figured, he says, that the fixed overhead expenses of an alfalfa ranch per acre runs to $26 per annum. This is on a basis of $6 for power, $2.50 for irrigation, and $17.50 for interest on investment and depreciation of buildings and plant. With a cow to each two acres this means an overhead charge of $52 annually against each animal in the herd.

Using the cut alfalfa for feed and doubling the number of animals on the ranch would mean an additional labor cost, according to careful figures which Premo has worked out, not to exceed $6 per head per annum, making the total cost per cow per annum $32 as against $52, which is a reasonable average at the present time.

This system of feeding has been brought to its greatest perfection in the Sacramento country, where the ranchers consider that one cow to the acre is the proper limit. The alfalfa land in the Sacramento district is not, taken as a whole, as good as that tributary to this district, says Premo.

Speaking of the district about Porterville as a whole, Premo declares there are individual places in this section which have no equal in any of the alfalfa country to the north of us.

Premo declares that the dairymen of this district are securing only a small proportion of the returns of which their property is capable, and when they allow the best methods to go neglected they are not getting the returns which will justify the prices at which many of them hold their property for market.

Original from UNIVERSITY OF CALIFORNIA

Biggest Wheat Crop in Ten Years Predicted for California this Season

California will raise the biggest crop of wheat in 1915 which has been grown in this state in ten years. Such is the opinion of several well posted grain dealers who have been watching the situation closely. Yet even so it is said that the state will not produce wheat enough to meet its requirements.

The annual consumption of wheat in this state is estimated by members of the grain trade at from 450,000 to 500,000 tons and it has been years since California raised such an amount of wheat. Time was when the fertile valleys of the interior produced a large surplus for export and the San Francisco market ranked among the world centers of grain distribution, but that was long ago.

Barley raising has largely superseded that of wheat in the interior and the normal production of wheat in recent years has fallen to about 150,000 tons. In fact grain trade statisticians say that two years ago California did not produce in excess of 95,000 tons of the cereal. Due to the high prices which have prevailed for wheat since the outbreak of hostilities in Europe, however, the farmers of the state extended their wheat acreage to a considerable degree during the fall and winter months.

While no definite statistics are yet available, next year's crop is estimated at from 300,000 to 400,000 tons, which is more than twice the average amount produced for several years. This increase in wheat production, however, grain dealers say, will be largely at the expense of the barley output and as a consequence next year's output of that commodity is now placed at from 450,000 to 500,000 tons, as compared with this season's big yield of between 800,000 and 850,000 tons.

Wheat planting in the various sections of the state was practically at an end the first week in March, as farmers generally feel that the season is too far advanced to run the danger of injury by heat before the plant has made sufficient growth to enable it to withstand the summer sun. Barley planting, however, was still going on in some sections early in April.

While reports from the greater part of the state indicate that the outlook for the grain crop is particularly good, reports from some sections are not particularly encouraging. These latter, it is said, come largely from San Joaquin County and the sections along the Sacramento and San Joaquin rivers, which have suffered by floods and too much rain. The San Joaquin County acreage, advices from that section state, has been greatly reduced by the inability of farmers to get out and work their land, the thick adobe soil having shown a disposition to retain the moisture to a marked degree.

The outlook in the San Joaquin Valley as a whole, however, it is said, is very good. One feature which will tend to decrease the barley acreage this year is the reduction in the amount of summer fallow land. Almost every available acre was in use in 1914 and reports state that a considerably larger acreage will be permitted to rest than last year.

All things considered the grain trade holds that although the state will undoubtedly raise the biggest wheat crop in many years during the coming season the total yield of all grains will be less than last year.

VALLEY DEVELOPMENT PROGRESS

Tulare poultrymen are shipping out 2,400 dozen eggs weekly to the Los Angeles market.

Kings County has 50,000 acres of alfalfa in, for which they figure an income of $1,500,000 for the year.

The Sanger creamery, recently put in operation, is running at capacity and is turning out 400 pounds of butter daily.

A crop which realized $2500 was taken from ten acres of three-year-old plum trees on the Austin ranch near Reedley. This is considered to be an exceptionally good record for so young an orchard.

A well on the property of the Pioneer Land Company near Porterville, 300 feet above the floor of the valley with a water level of about 100 feet, was recently brought in and adds a great deal to the citrus prospects of this immediate territory.

A cow belonging to Frank Beattie of Porterville gave birth to three calves recently and is said to have created a local record by so doing. The calves weighed 47½, 45 and 40 pounds, respectively. The calves are healthy. County Veterinarian A. R. Lang says that twins are fairly common among cows but that he has never heard of triplets in the Porterville region.

Tulare County fruit crops will be good, according to Horticultural Commissioner Collins of Tulare County. Collins thinks that figs, berries and peaches will be a full crop, while the apricots may only realize about 75 per cent. The almonds should touch 90 per cent. Grapes are reported to be blooming heavily and likely to average up well. The prunes are dropping considerably and may be light.

The new fruit standardization bill passed by the last legislature provides that every box or crate of fruit shall be of practically uniform size, quality and maturity, but applies only to fruit shipped outside the state. Included in its regulations are cherries, peaches, apricots, plums, pears, prunes, grapes, berries and cantaloupes. The passage of this bill means to the east that it will get only the highest grade fruit from California. The effect of the bill is said to be to keep the farmers and fruit growers honest and to protect the shippers of high-grade goods against the shippers who put their good fruit only on top.

One part citric acid to eight parts souble solids has been adopted by the Tulare County Citrus Protective Association as the standard of orange maturity for marketing.

The rains in Kern County, which lasted about fifteen days and were unprecedented, no such spell of wet weather being remembered by the oldest inhabitant, greatly benefited the dry farmers, with their thousands of acres of grain.

That the vast area of tules in the overflow lands of the San Joaquin and Sacramento deltas is of great value is affirmed by a communication just received from Jason S. Merrill, assistant chemist of the United States Department of Agriculture and Bureau of Industry. He advises U. A. Beard, secretary of the Sacramento Valley Development Association, that the tules can be converted into paper. Merrill's letter states that 20,000 tons per year could be used.

Goat raising is destined to become one of the important industries of Kern County, according to S. L. Gregg and sons, recent arrivals at Wasco from Pasadena. The Greggs came to Wasco about two years ago. They watched the demand for goat milk in the south and brought about fifteen goats from Pasadena, allowing them to browse loose on the sagebrush adjoining the Gregg farm. At practically no expense for feed, the herd has thrived and grown so that several hundred dollars' worth of animals were sold, and the original herd is still intact. Gregg is building up a demand for goat milk.

VALLEY DEVELOPMENT PROGRESS

The annual Fresno County Fair will have a $50,000 premium list this fall.

San Joaquin County boasts of a record breaking cherry crop this season.

Dairymen of Kern County are discussing the formation of a cow testing association.

Alfalfa growers are behind a movement to establish an alfalfa grinding mill in Merced County.

The dates of the Porterville Poultry and Pet Stock Association's show have been announced as December 9-12.

Compilers of the new Fresno City directory claim that city has a population of 50,000.

J. H. Rogers of Delano has shipped a 3½-pound head of lettuce to the Panama-Pacific Fair.

Work upon Kingsburg's new cannery is progressing. The building will be of corrugated iron, 320 feet long and 85 feet wide.

Bonds for good roads and a system of laterals 102 miles in length carried in Kings County earlier in the month, there being 4257 in favor of the issue of $672,500 and 1372 against.

The Libby, McNeil and Libby canning establishment at Selma is to erect another warehouse which will double the storage capacity at this plant.

One shipment consisting of 23 carloads of prime steers was recently made from the Porterville district to San Francisco.

Terra Bella tomato growers have been given to believe that they will receive from $10 to $12 per ton for their 1915 output and are urged to plant largely at this profitable figure.

The picking of the Valencia crop in the Porterville orange district is now under way. The crop promises to be of good quality and very heavy. Marketing conditions are constantly improving.

The melon and sweet potato growers around Turlock are getting together for the purpose of looking up markets and devising better methods of handling their products.

Kern Mesa is shipping a ton of peas daily to the San Francisco market.

L. D. Akridge, who bought the Murphy Bros. ranch on Hildreth Avenue east of Madera last fall, is experimenting with dasheens, a new vegetable, somewhat similar in flavor and use to the potato. He sent to a seed house in Florida for a bushel of the vegetables, and planted them all except enough for a dinner. They are coming up, and make promise of yielding a crop. They require a moist soil and plenty of water. In addition to his experiments with vegetables and trees, Akridge has leveled and checked more than ten acres this winter, and has just installed a new pumping plant, throwing 400 gallons of water per minute. As an experienced nurseryman, he is also trying out some of the favorite varieties of apples and peaches, grown in the middle west.—Madera Tribune.

County Commissioner of Horticulture Kent Knowlton has just issued his compiled report of the 1914 crop production showing that Kern County produced in actual cash value over $6,000,000 in agricultural products. The principal item was beef production, which totaled $4,000,000. Grain was second in importance. It is expected that the grain acreage for 1915 will greatly exceed that of last year, as the war and other conditions have made the prospect for high prices exceedingly bright. Dairying is fourth on the list with $400,000, and hay comes fifth with a value of $229,550. The following is the list of 1914 values: Grain, $600,000; hay, $229,550; corn, $95,400; potatoes, $15,000; raisins, $24,000; prunes, $14,000; peaches, $7,500; apricots, $7,500; oranges, $20,000; olives, $3,000; dairy products, $400,000; poultry, $125,000; beef, $4,000,000; hides, $120,000; tallow, $25,000; pelts, $18,000; tankage, $9,000; horns, hoofs and bones, $3,000; glue stock, $2,000; lambs, $90,000; mutton, $150,000; wool, $80,000; hogs, $48,000.

VALLEY DEVELOPMENT PROGRESS

Many peach growers of the San Joaquin Valley are urging on a united fight to stamp out Little Leaf.

Nine boys in the Agricultural Club of the Tulare High School are competitors in a pig raising contest. A total of 36 pigs are being scientifically cared for.

The county board of forestry of Merced County has announced plans to be followed this year in planting new trees along the state highway in that vicinity. The acacia melanoxylon and the black mission fig are the varieties chosen, these being most suitable in point of habit of growth and adaptability to soil and irrigation conditions along the highway.

There is much activity in Kern County in bean planting, hundreds of acres being planted to beans in this county the present season, the favorite variety being pink beans. In the Bakersfield district as high as $160 an acre was made on pink beans last season.

California's barley crop this year will be about half that of last year, grain men say, because farmers everywhere have reduced their barley acreage to raise wheat, on account of the allurement of high market prices for wheat resulting from the European war. The grain men state the state's wheat crop promises to be the largest in history and that there will be an unusually heavy barley crop per acre.

Ten sections in the big Poso Ranch of Kern County are being planted to alfalfa for beef fattening purposes. About seventy-men are employed making the land ready. The ranch management plans to feed alfalfa and chopped corn and next summer will plant a large acreage of Egyptian corn.

Porterville is looking forward to an additional share of prosperity because of the purchase of 1000 acres of cement locations eleven miles from Springville by a company which it is said will at once install a big plant and construct a spur of the railroad to the scene of its operations.

Miller and Lux, according to recent announcement, are planning the disposal of a 14,000 acre tract of wheat land in Madera County in small farms and the work of cutting up the land is now under way.

Tobacco plants brought over from Belgium last year and planted on the Vandorp ranch near Visalia, have thrived and some excellent specimens of the leaf have been on exhibit in Visalia.

The directors of the Fresno District Fair have announced the building of another $8,000 exhibit structure which will be completed in time for the coming fair.

The Merced Sun of Monday, May 17th says: The Franklin district scored another tomato triumph today when Pietro Montirsiro, whose ranch is located near the Franklin school house two miles west of Merced, made the season's first shipment of tomatoes from this territory to San Francisco. The shipment comprised three boxes weighing twenty pounds each. D. Plano, a neighboring farmer in that district, brought the first tomatoes of the season to the local market exactly one week ago today. Much of the fame of Merced County as a tomato producing zone has been established by the truck farms of the Franklin district whose acreage in tomatoes is a big percentage of the total of 200 acres which Merced has planted to that variety of produce, with every acre being farmed to good profit. Besides being a big producer of tomatoes, Merced is also an early producer, season after season being the first locality outside of the Imperial Valley to ship tomatoes to the coast market. Though the long period of rainfall has been something of a handicap to the extensiveness of early production this year, a big tomato crop is expected to come eventually. In 1914 the total tomato shipments from this locality reached 2,716,830 pounds.

VALLEY DEVELOPMENT PROGRESS

Oakdale, Stanislaus County, is planting very largely of beans; one planter is putting in 100 acres of teparies.

The Modesto Chamber of Commerce is already organizing to make a fight for the $15,000,000 state roads bond issue.

Merchants of Turlock are raising the final $6,000 needed for completing the work of the Turlock Merchants' and Growers' Association.

Tulare County orange growers are sending organizers to southern orange districts to aid in perfecting a new retail orange marketing association.

Bean culture will be engaged in near Merced on an extensive scale on the Grogan tract this year. Fifteen hundred acres will be planted to this product. One lease alone is for 500 acres, to be devoted to beans.

The San Joaquin Valley is already organizing its forces to aid in the entertainment of the International Irrigation Congress which will be held in California September 13-20. Fresno hopes to entertain at least 300 of the delegates on September 15 and 16.

The Redbands Orchard Company of Visalia again gets credit for shipping the first California peaches to market this year. Sunday night, May 16th, 97 20-pound crates of early Alexander peaches left Visalia by express for San Francisco. For several years Redbanks has shipped the earliest peaches to market. This year the first fruit went forward four days later than last year, due to weather conditions. Shipments will be made regularly hereafter. The fruit this year is of exceptionally fine quality. It is probable that before the end of the week Redbanks will ship the first apricots of the year.

The Tulare Co-Operative Creamery Company has joined the ranks of those butter makers and sweet cream dealers who are working to eliminate the middle man where it is possible, in order that the producers may realize a greater profit. The company has joined with the Visalia Creamery Company and the Lakeview Creamery Company of Corcoran in opening up Los Angeles headquarters for the sale of their products. All the products of the three cleameries will be sold through the southern headquarters instead of through the commission houses as in the past.

The Merced Sun says: According to the estimate of local crop experts, the sweet potato output from this community this year, aside from being up to its normal quantitative yield, will find a big market. The last carload of the 1914 crop was shipped last Tuesday, May 18th, to San Francisco, which means that all future orders must be filled from the new crop entirely. Although the 1915 sweet potato crop will not be so early this year as usual, the yield per acre is expected to average the same. There are 9,000 acres in Merced County planted to "sweets" this year, which, at an average rate of yield, will produce 54,000,000 pounds for market consumption.

The Tulare creameries paid out $10,000 more for cream delivered during April than for March deliveries and gained nearly $17,000 over the same month last year. The rains and green fields this season, coupled with the importation of better dairy cows and the more general use of better dairy methods are pushing the dairy industry forward once more. Prices this year are slightly lower than those of the same time last year, but this is probably accounted for by the greater production. The total disbursements to dairymen of Tulare and adjacent territory for April deliveries were $82,068.88. The total amount paid out last month was $72,059.43, and the total paid out May 15, 1914, was $65,330.93. Prices this month ranged from 23½ cents to 28½ cents per pound for butter fat, against 25½ to 29½ cents in April and 25 to 29 cents on May 15, 1914.

Some Poultry Facts Worth Knowing

The average length of a hen's egg is 2.27 inches.

The average diameter, at the broad end, 1.72 inches.

Average weight, about one-eighth of a pound.

A hen's egg is 50 per cent water, 16 per cent protein, and 33 per cent fat.

Eggs are colored by a pigment, which, it seems, does not exist in all fowls.

The color of the brown egg becomes lighter as the number of the product increases.

The life of a fresh egg is three days.

The yolk of the egg spoils more quickly than does the white.

The older the egg the less is that sweet, rich flavor noticeable.

The fresh egg beats to a froth easier than one that is stale.

It requires a longer time to boil a fresh egg than it does a stale one.

In a fresh egg, when boiled, the white will stick to the shell. When the egg is a few days old, the shell peels off smoothly.

Eggs lose weight when cooked.

Eggs contain 4 per cent less protein and 6 per cent less fat than sirloin steak; half as much protein and one-third as much fat as cream cheese; twice as much protein and ten times as much fat as oysters. Fuel value, about two-thirds that of beef, and one-third that of rich cheese.

The outside of a fresh egg is coated with an albuminous or mucilaginous substance. At the moment the egg is laid, this substance is of a sticky nature, but readily hardens when it comes in contact with the air. The purpose of this coating is to prevent the egg from spoiling; if the egg should be washed, this coating is removed and the keeping qualities are greatly lessened.

After being laid, a portion of the matter contained in the egg is lost daily, by transpiration, notwithstanding the compact tissue of the flexible membrane lining it and developing the white. A fresh egg is practically full, while in a stale egg there is more or less vacancy in proportion to the loss by transpiration. This is shown by holding the egg to a strong light.

* * *

Rape is one of the best and cheapest things to raise for green stuff for poultry. It is sown in the spring for summer use and in the fall for fall and winter use. It takes but a small plot of it to supply quite a flock of chickens right along. To be sure, it should be wired off so that they cannot eat the life out of it before it gets large enough to outgrow them. Or, as many do, cut it for them at all times, not allowing them on it at all.

* * *

The profit lies not so much in what you hatch as in what you raise and take care of. As one successful breeder said the other day: "I am not trying to hatch worlds of chicks, but I am making a strenuous effort to raise what I hatch, and to so raise them as to make them individuals of merit." Another said he had hatched about 600 chicks last spring and had but about 75 left to tell the story. You can readily see which pays the better, to hatch 600 and raise 75, or to ratch 125 and raise 100.

* * *

Said an experienced poultryman recently: "The dry mash hopper feed method is the only way I can see it. I feed mine a mixture of ground wheat, oats and corn about equal parts. I do not feed beef scraps, but I do feed skim milk. I buy it of the milk man and pay 7½ cents per gallon for it, keeping it before my chickens all the time. It takes the place of meat. The whole grain I do not hopper feed, but throw it in litter and let them dig it out for exercise."

The Non-Saccharine Sorghums

By ROGER M. ROBERTS
Agricultural Demonstrator Santa Fe Railway System

In Pacific Planter

The non-saccharine sorghums generally are out of the experimental class as the general characteristics of each of the different kinds is well known. Within the last year a rather new corn has created much interest, insomuch as it brings a good price in the market and has several qualifications making it somewhat better than various of the other non-saccharine corns. This is feterita, which is being planted in considerable acreage in California, especially in the Sacramento and San Joaquin Valleys. In Texas this crop has been standardized and thousands of acres are annually seeded.

The characteristics of the various non-saccharine sorghums are as follows:

Feterita is Soudan Durra—blue white—upstanding.

Milo Maize is Standard Milo—orange—goose neck.

Dwarf Milo Maize is Dwarf Milo—orange—goose neck.

Red Gyp is Red Durra—red—goose neck.

White Gyp is White Durra—white—goose neck.

Kafir Corn is Red Kafir—red—upstanding.

Standard Kafir is Black Hull Kafir—white—upstanding.

Dwarf Kafir is Black Hull Kafir—white—upstanding.

Egyptian Wheat is Shallu—pearly—upstanding.

The feterita matures in about 90 days, the Kafir in about 120, and the Milos in about 100 days, while the Shallu takes about 110 days to come to maturity. It is difficult to give any definite estimate with regard to yields as these depend almost entirely upon the soil, the water and the skill with which the crop is grown. They will all produce good crops if carefully cared for, though it is generally supposed that standard Milo and Feterita produce best. Dwarf Milo is also a very good crop and a heavy yielder.

One of the principal advantages of feterita is its ability to give two crops in one season without reseeding. With the crop planted in April, it will mature in about 90 days, when the grain should be cut off at the top of the stalk and just under the head. The ground should now be watered when a series of buds will develop in the top portion of the stalk. These buds will grow and produce heads and grain. The second crop is not so heavy as the first but still adds materially to the total production for the year.

The particular advantage in this is that the ground does not have to be refitted. Those who have grown the non-saccharine sorghums understand that there is considerable labor attached to the clearing of the ground after the crop has been matured. Owing to this difficulty, it is seldom that two crops are attempted on the same ground in the same year, unless it can be done without refitting and cleaning the ground.

If the grower is desirous of having forage rather than grain for the second crop, then the first should be harvested by cutting off the stalks close to the ground and at the top of the crown. After watering, this crown will immediately develop a great number of shoots which will grow from two to four feet in length and produce a considerable amount of forage which is relished by cattle in particular. It should be noted that it is this second crop of forage which sometimes causes the poisoning of stock. The poison produced is prussic acid and is not developed unless the forage has been struck by severe frosts or possibly gets very old. So long as it is fed before being frosted, no danger may be apprehended. A slight frost does not produce this poison.

Independent Oil Producers' Agency Report of California Oil Operations

Following is the April report of the production and field operations of the California oil districts as prepared by the Statistical Department of the Independent Oil Producers Agency at Los Angeles:

District	Rigs Completed During Month	Drilling	Completed During Month	Abandoned	Producing	Production For Month	Daily Average		
							March	February	1914
Kern River	..	2	1	..	1,258	563,688	18,789	17,927	19,801
McKittrick	..	2	..	..	248	293,575	9,786	10,144	10,606
Midway-Sunset	7	49	9	1	1,239	3,249,565	108,319	108,144	135,635
Lost Hills-Belridge	1	6	8	7	259	363,501	12,117	11,725	13,221
Coalinga	..	8	2	1	820	1,186,422	39,547	39,625	43,705
Lompoc-Santa Maria	..	4	1	..	232	356,594	11,887	11,528	11,689
Ventura Co.-Newhall	2	17	7	2	432	82,710	2,757	2,475	2,586
Los Angeles-Salt Lake	..	1	..	..	699	186,969	6,232	6,038	6,731
Whittier-Fullerton	5	49	5	..	572	1,048,926	34,964	36,337	37,974
Summerland	..	..	..	..	125	4,950	165	160	163
Total April	15	138	33	11	5,884	7,336,900	244,563	244,103	281,841
Total March	14	136	20	9	5,813	7,567,197	244,103	......	......

Stocks April 1st, 1915	59,628,933
April Production	7,336,900
	66,965,833
Shipments April	7,195,044
Stocks May 1st, 1915	59,770,789
Stocks Increased April	141,856

Daily Average	March	Daily Average February	1914
Production	244,563	244,103	281,841
Shipments	239,835	241,076	258,825
Surplus	4,728	3,027	23,016
Oil Shut In	28,000	28,000	18,500
Potential Surplus	32,728	31,027	41,516

During a recent advertising campaign nearly 3000 electric flatirons were added to the service in Boston.

A unique dinner was recently given in Toledo where each guest cooked his own dinner by electricity.

A St. Louis physician has discovered that the common electric soldering iron can be used successfully for cauterizing in surgical work. Electric cauteries have been made for surgical use, but they proved expensive and unreliable. However, the electric soldering iron of good quality happens to have just the temperature that is so desirable for cautery work. It destroys tissue, turning it into a white, cooked mass with hardly any charring and no hemorrhage, yet its continuous unvarying heat makes it work rapidly.

United States Navy Increases Use of Crude Petroleum for Fuel

Reports of an actual or prospective increase in the use of fuel oil in the navy and other marine branches of the government service are always of interest to California petroleum producers and they are particularly interesting in such times as these when news with an optimistic tinge as to the immediate future of the industry is none too plentiful. In this respect a statement issued by the Navy Department under date of March 15th of this year is of particular interest, for it shows that the consumption of fuel oil on fighting and subsidiary craft was greater last year than in 1913 by nearly 70 per cent.

During 1914 the fuel oil consumed by the navy amounted to 600,000 barrels, as compared with 360,000 barrels in 1913. Considering the enormous production of oil in California alone, the burning up of 600,000 barrels in one year does not amount to much, but the fact that the consumption has shown a remarkable increase within a few years is a straw that shows the direction of the wind. As many of the fighting craft and the smaller ships now in course of construction for the use of the navy and other branches of the government service are being equipped as oil burners, the consumption is certain to show another marked increase during the present year.

The California oilfields have not been overlooked by the Navy Department in making arrangements for future supplies and for storage facilities In the naval appropriation bill, which has passed the lower house of Congress, provision is made for the construction of fuel oil tanks to cost $460,000, and of this amount $280,000 is to be expended on the Pacific Coast and at Pearl Harbor, Hawaiian Islands. An additional $10,000 is provided for the custody and care of the naval petroleum reserves in the California Elk Hills district. The storage tank appropriations include $80,000 for each of the stations at Mare Island, Puget Sound and Hawaii, and $40,000 for the San Diego site. The total naval fuel storage appropriation is $520,000.

Percheron is Now the Favorite Breeding Horse

Percherons are the favorite breeding horses imported by American breeders, according to recently gathered statistics just made public by the Department of Agriculture. Next in favor for importation are Belgium horses, with Clydesdale "also ran."

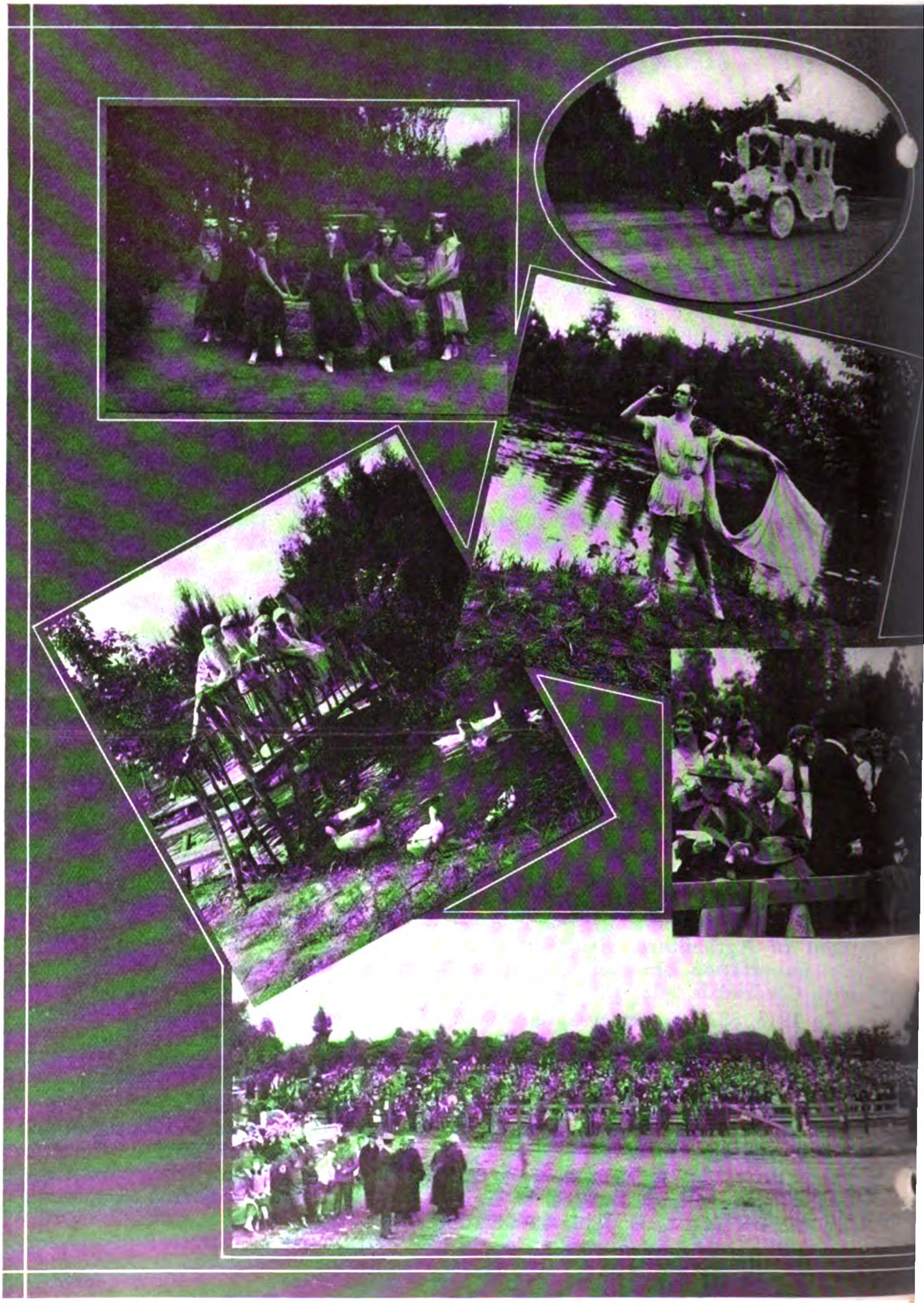
In 1913, 882 Percheron stallions and 600 mares were imported. Of Belgiums, 621 stallions and 362 mares were brought across the water to this country, while only 45 Clydesdale stallions and 29 mares were imported last year, while 128 Shier stallions and 57 Shire mares were brought in. The total importations for the year of highbred horses were 1733 stallions, including ponies, and 1264 mares.

Large Storage of Fresno County Grown Tobacco

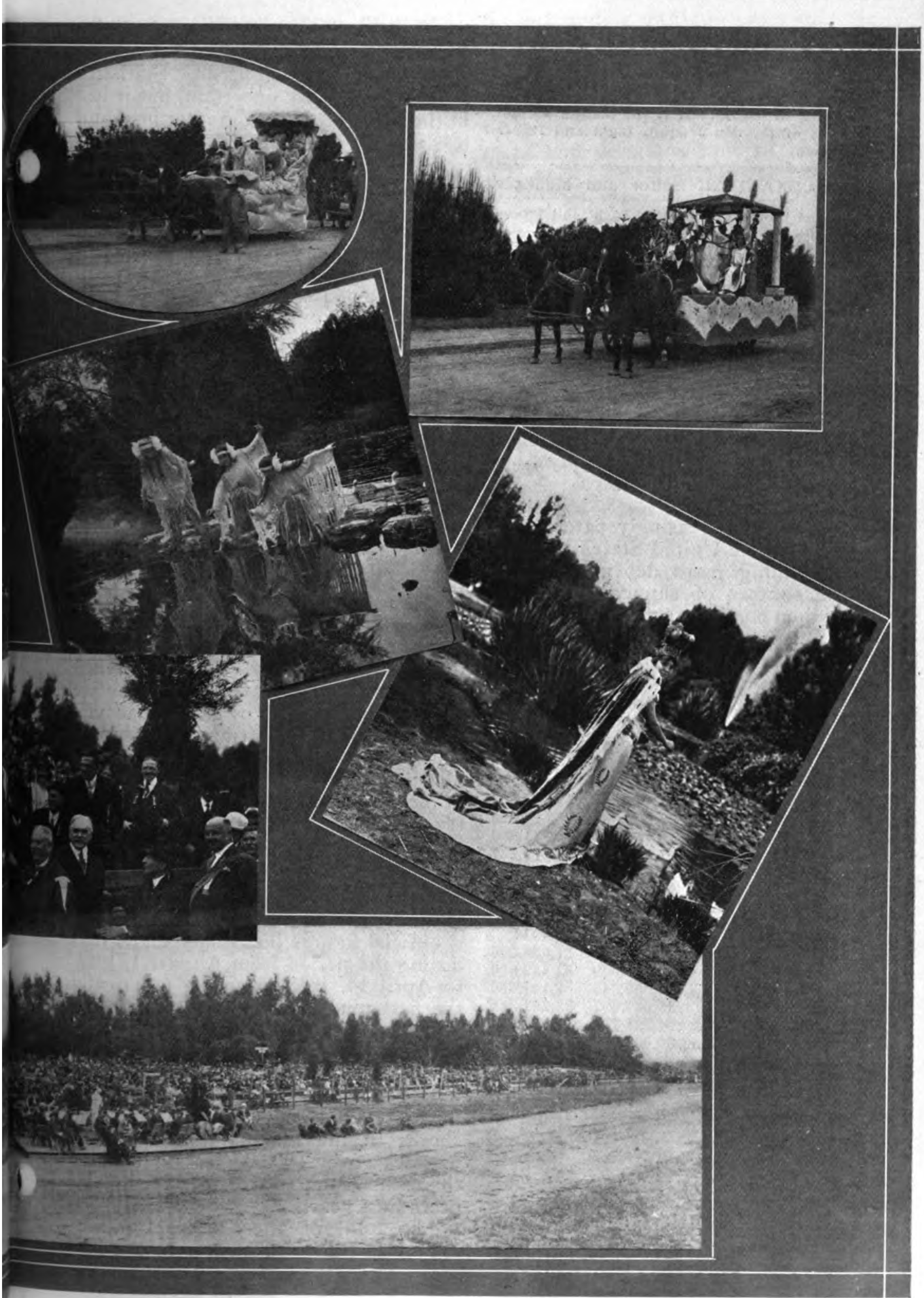
Nearly 150,000 pounds of Turkish tobacco, grown in Fresno County, has been delivered to the Fresno branch of the Manufacturers' Tobacco Company to date, and it is expected that this figure will be greatly increased before the middle of April.

Deliveries represent, in many instances, the production of the past three years. In a number of cases the tobacco growers have been unable to find a market for their crop and have been forced to store the tobacco until such time as they could sell it. Though some of the tobacco was grown three seasons ago, the majority of it seems to be in good condition and the growers expect good prices.

Scenes at Fresno's Ann



ual Raisin Day Festival



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I. W. ALEXANDER, Editor and Manager

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Where is Our Meat Supply Coming From?

It has been increasingly patent that Europe and the United States are rapidly becoming more dependent upon outside sources of supply for meats. This, when conditions are entirely normal. But conditions are abnormal to a degree that threaten the near future. In either case the meat position of the world is not a satisfactory one. This is evidenced by the latest statistics of cattle:

Cattle	1914	1913
Great Britain	12,184,505	11,936,600
United States	56,592,000	56,527,000
Canada	6,036,817	6,831,800
Australia	11,597,943	11,671,707
New Zealand (1911)	2,020,171	
Argentina	29,220,000	28,766,168

Sheep	1914	1913
Great Britain	27,963,977	27,629,206
United States	49,717,000	51,482,000
Canada	2,058,045	2,141,000
Australia	85,049,697	83,231,315
New Zealand	24,798,763	24,191,810
Argentina	80,000,000	80,401,486

In the United Kingdom, therefore, cattle increased 2 per cent and sheep 1.2 per cent, this being the first increase in sheep since 1909. But Canada lost 12 per cent in cattle, largely due to United States demand under free tariff. The United States shows a striking falling off in sheep. And Argentina has also lost sheep, though it gives a slight indication of ability to meet increasing demand by natural increase of its beef herds. Statistics as to Uruguay are uncertain, but it has in the last year shown greater beef and less mutton exports.

With tremendous increase in world population annually, which even the staggering losses in men by reason of the European war will not offset, the practically stagnant condition of meat supply gives at least food for thought. While Canada is tempted by our tariff to send her supplies to this side of the border, this cannot continue, because of her own need for conservation of cattle resources. Mexico, in spite of interminable conflict, will soon need all her herds. It will be years before revival of cattle raising in the southern states of this country or in the west can replace vanishing supplies. Increase of imports from South America into this country from 4370 tons in 1913 to 53,111 tons in 1914, and imports of 17,721 tons for seven months—until prohibition of exports except to the United Kingdom—from Australasia simply emphasize our dependence upon outside supply. Brazil, French and British Africa and Madagascar are in the initial stages of exports as yet. More than ever, farmer and stockraiser in the United States must realize both the opportunity and the duty of increasing cattle supply in this country.

Decrease in Immigration to United States

Official figures just issued show that during the period from August 1, 1914, to April 14, 1915, covering practically the first nine months of the European war, a total of 301,825 immigrants arrived in this country, against 984,213 for the corresponding period of 1913-1914. The figures thus reveal the fact that the flow of aliens toward our shores in the nine-months period of war was over 680,000 less in number than the comparative period of the preceding year.

The total of alien arrivals during 1914 was the third largest in the history of the country, being surpassed only in 1907, with 1,438,469, and in 1913 with 1,427,227, but the excess of immigrant aliens over emigrant aliens in 1914 was greater than the excess of 1913, being 915,142, compared with 889,702 in 1913.

The total immigration since 1820 (all the aliens up to 1904, inclusive, and "immigrant" aliens since) is 32,027,080. Persons to the number of 37,651 were debarred from entrance and returned within three years after landing, compared with 23,339 in 1913. The record of 1914 represents an increase of 1 per cent in the number of arrivals debarred. The total number of departures during 1914 was 633,805, compared with 611,924, of which 303,338 were classed as emigrant aliens, being those whose permanent residence had been in the United States, but who intend to reside permanently abroad. The emigrant aliens of 1913 totaled 308,190.

The average amount of money per person brought in last year was $34.92, compared with $34.14 in the previous year. Farm laborers, laborers or servants, formed only 54.1 per cent the immigrant aliens, compared with 57.7 per cent in 1913. Of the total immigrant arrivals, the southern and western states absorbed a considerably larger percentage than in 1913. Last year 17.5 per cent of the total went to destinations in those states, compared with 14.2 per cent in 1913. Last year 18.8 per cent was destined for states east of the Mississippi and north of the Potomac and Ohio rivers, compared with 85.2 per cent, while 59.8 per cent was destined for the four states of Illinois, Massachusetts, New York and Pennsylvania. Six-tenths per cent each year went to the Philippines, Hawaii, Porto Rico and Alaska.

. American Tourists Begin to "See America First"

The tide of tourist travel is overflowing westward and Secretary of the Interior Lane is planning for the biggest season ever known in the national parks. He has opened all these now for automobile traffic in order that the public may be better accommodated.

The expositions in San Francisco and San Diego naturally will profit. Thousands who would normally turn toward Europe will be seeking amusement and diversion now in America. The newly started tours to the expositions via the Panama Canal inaugurated by the Panama-Pacific line find their sailings fully booked for weeks ahead.

In fact, Secretary Redfield of the Department of Commerce estimates that about $170,000,000, usually spent abroad by American travelers, will remain in America and be spent here. For every one of these dollars spent at home, American workmen are given work. Thus, one effect of the war is discovered which is not bad.

Higher Wages; Shorter Hours; But Costlier Foodstuff

Workingmen in the United States are considerably worse off now than they were a few years ago. The "real wages" of 1,500,000 workers declined steadily from 1907 to 1913, according to the Government Bureau of Labor Statistics. According to the first tabulation of "real wages" ever made by this bureau, and now being shown by means of a graphic electric chart at the Panama-Pacific Exposition, the bureau concludes that where a dollar in 1907 would buy 121 food units, in 1910 it would buy only107, and in 1913 only 100.

This startling decrease in the purchasing power of the dollar was accompanied by a slight decrease in the hours of labor, and somewhat more marked increase in rate of wages. But the rise in food prices wiped out these advantages, and left the laborer considerably worse off in 1913 than he was in 1907. With the same tendencies at work, it is evident that he is still worse off now than he was in 1913.

These conclusions are based on all the wage reports issued by the Bureau of Labor Statistics, and cover both the general wags, and the union wage scales.

Original from UNIVERSITY OF CALIFORNIA

Health Facts to Remember

The Body as a Machine

What has been said regarding the keeping of machines in good order applies also to your body which is a high-grade machine which it is your responsibility to keep in good running order. If you do not you will not only be in great danger of illness but also more liable to accident and you may be "laid up" for a longer time and in more danger of being permanently crippled when an accident occurs than if you are in good physical condition.

Following are some hints for keeping in good health.

The Human Eye

The eye is the most valuable organ in the body. Loss of one eye means considerable loss of working capacity, while a defect of one or both eyes not only interferes with accurate work, but by causing unconscious strain produces headache, stomach trouble and other sickness. Eye strain is caused by a good eye trying to work with a defective one. The strain is unconscious in many cases and a man does not know that his eyes are defective until he has them examined.

Continued strain gradually wears out the eyes.

A man who knows that his eyes are defective should consult an oculist and learn whether glasses are necessary.

If they are, he should get them and wear them as directed by the oculist. They will not only make his work more accurate but will save his eyes and improve his general health.

Healing of Wounds

Wounds heal very fast if they are clean. When we say clean we mean not only clean of dirt, but also clean of germs. These germs lie on the skin and often on the tool or whatever causes the wound. When the germs are not cleaned out of the wound at once there may be enough to cause blood-poisoning.

The best way to prevent blood-poisoning is:

1st. To clean the wound at once.

2nd. To keep it clean by putting over it a clean piece of linen which has been boiled, or a piece of sterile gauze.

3rd. To hold the above firmly in place with a bandage.

The best way to clean a wound is with gasoline, using plenty of time and a clean piece of linen to wash with. Clean the skin all around the wound and wash into the wound itself. Then paint the wound and neighboring skin with Tincture of Iodine; this kills the germs.

If you have no gasoline and iodine handy, wash the wound thoroughly with alcohol and put on a piece of clean linen wringing wet with alcohol.

Blood-Poisoning Following Injuries

Blood-poisoning means that at the time of the injury or some time later, pus-producing germs have gotten into the wound and stayed there.

Pus-forming germs are all about us —on the walls, floors and on the tools we use. They are also on the skin.

When an injury occurs which breaks the skin these germs are carried in by the force of the injury and when so implanted they grow and multiply in the wound.

As they grow and multiply, they throw off poisons which not only irritate the wound and the skin, and the tissues around it, but are also absorbed by the blood.

When these poisons are carried around the body in the blood they produce headache and fever.

Original from UNIVERSITY OF CALIFORNIA

Blood-poisoning or infection is a very serious condition and is almost always the result of not cleaning a wound which has just been received.

It is best to have this cleaning done by some one trained in the work.

The first sign of infection is pain, heat, redness and swelling.

When you think a wound is infected, whether you received it in the factory or outside, have it attended to at once.

Treatment of Burns

When the skin is burned by fire, steam, hot water, electricity, etc., there is complete death of the outer layer of the skin and partial death of deeper layers, depending on the depth of the burn.

The skin reacts to the burn by first becoming red and then by formation of blisters which separate the dead from the living skin.

The extreme pain of a burn is due to the irritation of the skin nerves which are very sensitive and to the comparatively large area of skin involved in a burn, much greater than that of a bruise, cut or laceration.

When a burn is received, the first thing to do is to cover the burned area with cloths wringing wet in a strong solution of cooking soda (saleratus) in water.

Throw half a cupful of soda or more in a basin of warm (not hot) water. If the hand or foot is burned, plunge it in and leave it there under water for half an hour or until the pain disappears.

Then dress the burn with sweet oil (olive oil) covered with soft linen or cotton as old handkerchiefs or napkins.

In case of a bad burn, put the person to bed, cover all you can with cloths sopping wet in the cooking soda solution and send for the nearest docto at once.

The blisters usually appear the day after the burn.

Do not prick these blisters but have a doctor do it.

Unless they are opened properly they may easily become infected and blood-poisoning set in.

Strains

A strain is caused by lifting something which is too heavy, or when lifting in a cramped position. The strain almost always occurs when the man knows the thing he is going to lift is too heavy for him. He then braces all his muscles and seizing the thing to be lifted, gives a sudden contraction of the lifting muscles.

If the object lifted is a little too heavy numerous small muscle fibres are stretched or torn.

The first result of strain is pain and sudden weakness. Later the pain becomes dull and the weakness more marked so that the patient cannot use the affected muscles at all.

The best way to avoid strains is when about to lift something heavy to first try it slowly. You can then see if it is easily within your strength; if it is not, get someone to give you a hand.

If you do strain yourself have your strained muscles strapped. This supports the muscles and relieves the pain.

For slight strains, rubbing with sweet oil will help.

Sprains

A sprain is caused by a wrench or similar injury which stretches or tears the ligaments of a joint.

The ligaments are the strong fibrous bands which hold the joint together. When a joint is twisted or wrenched these bands are stretched or torn.

This causes a swelling of the joint with an increase of the fluid in the joint. When such a condition occurs in the knee it is called water-on-the-knee.

SAFETY FIRST

SAN JOAQUIN LIGHT & POWER CORPORATION

The best thing for a sprained joint is rest.

The next best thing is heat.

If you sprain your ankle or knee try to get home without using the leg.

When you get home send for a doctor, then soak the ankle in as hot water as you can bear for half an hour, and go to bed.

The same treatment should be used for the sprain of any joint, applying hot cloths where the joint cannot be put into hot water.

Remember that a sprain is a serious thing and the joint should be given a good rest and when used be supported by a bandage and adhesive plaster straps or it will be weak for a long time.

THE GOSPEL OF SAFETY

There is a new industrial philosophy abroad. The new word is: "Nothing is so valuable economically as the man." The happier, the stronger, the longer-lived, the more ambitious he is, the better for mankind. Injury and death are the fruits of ignorance, recklessness and greed. A death toll is no part of a properly managed industry. It is wasteful. The saving of life thus becomes an industrial issue. In more than one American industry it has become a gospel—a gospel which, defended as a sound economic policy, is practiced with the whole-heartedness and zeal of a religion.—Miss Ida M. Tarbell.

SAFETY SLOGANS

Keep wide awake and use all the sense you've got—you'll need it in getting on street cars, in riding, in leaving and in crossing the street.

Don't hitch or steal rides behind street cars, wagons or automobiles.

Don't get off a car facing the rear. Face forwards.

Don't forget that bicycles, although slower than motorcycles, can run you down.

Don't roller skate on the streets. Use the sidewalks.

Watch the little children.

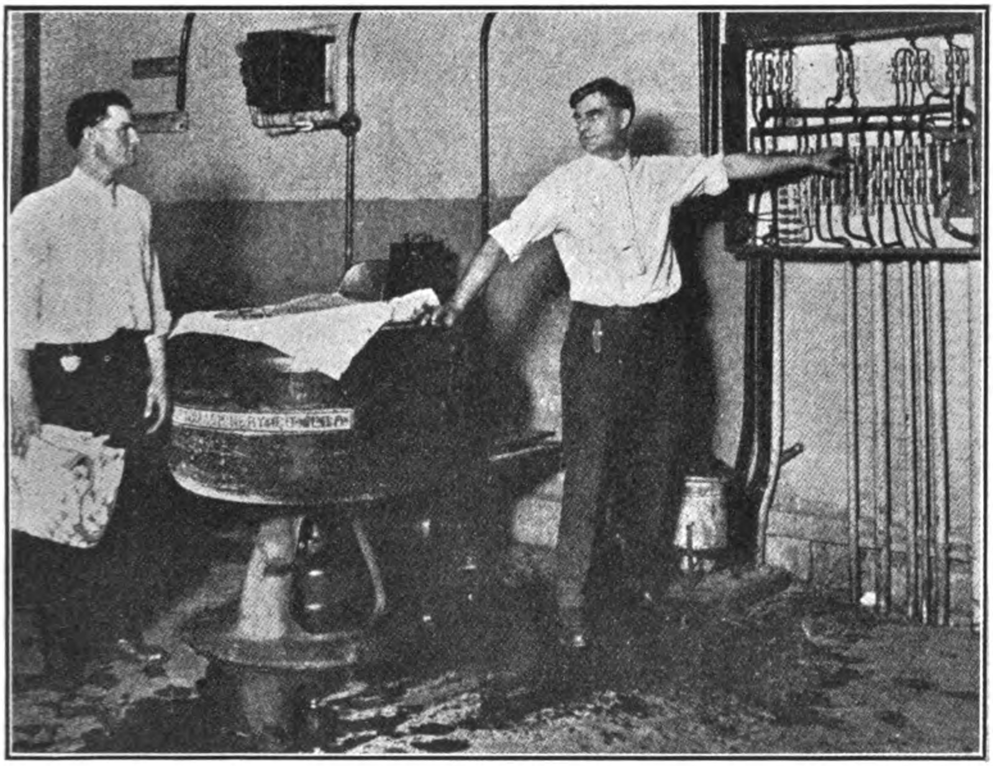
Don't jump on or off a moving street car.

Don't play in the street.

Don't cross the middle of the block. Walk to the corner.

Don't run across the street. STOP, LOOK AND LISTEN. THEN WALK.

Always Watch What You Handle



This man was reaching for a switch, his feet in water, his other hand on iron; he allowed the other man to detract his attention for a second. You can guess what happened to him!

Another man in another state did the same thing; he was killed on the spot, and the current was only ordinary city lighting—110 volts.

Lessons to be learned from this accident:

(1) Employe should watch what he is doing when reaching to a dangerous place.

(2) A wooden grating should be installed to provide as dry a floor as possible.

Try to know the general rules, and the rules of your department, and more particularly the special rules governing your own work. Report to the foreman when the rules are violated in a way that may cause an accident.

New employees and old men engaged in new work are more frequently injured than others. When attempting work that is new to you, find out the special dangers to be avoided; the foreman is glad to tell you.

Keep on Doing

There is lots of joy in living, if you strike
the proper gait,
If you always come up smiling in the face
of every fate.
If you're keeping step and whistling some
lively little tune
You'll be living gay and happy as a sunny
day in June.
Keep a level head; don't worry; help your
brothers on the way;
Let the sunshine of good humor shine upon
you ev'ry day;
Speak a cheerful word at all times, never
"knock" your fellow man
And you'll surely be rewarded. Just keep
doing all you can.
There is lots of joy in living if you live your
life aright,
Lots of sunshine and of roses—keep your
eyes turned to the light;
Look behind the clouds of trouble; there's a
silver lining there,
And you'll find it if you're only living life
upon the square.
Scatter good cheer like the thistle scatters
seed before the wind,
And the petty woes and troubles soon will
be left far behind.
Be a "booster" every minute, help along
your fellow man,
And you'll surely be rewarded. Just keep
doing all you can.

—Exchange.

Safety in Numbers

Two Pullman porters were discussing the volume of business transacted by the railroads over which their duties carried them. The discussion waxed warm until one said: "Gw'an away, why my road kills mo' folks than yoah road totes."

Appearance Deceptive

Mistress: "Are you married."

Applicant: "No'm. I bumped into a door!"

Safety First

"If some one were so ill-advised as to call you a liar, Colonel, in what light would you regard the act?"

"I would regard it simply as a form of suicide, suh."

A Good Job

Wife: "Well, what made you so late this time?"

Hubby: "Why, I took Horace home from the club, and his wife made me take him back again."

Practice Makes Perfect

The judge had assumed his severest look and was determined to speak in his harshest voice. The conversation follows:

Magistrate: "It appears to be your record, Mary Moselle, that you have been thirty-five times previously convicted for drunkenness."

The Prisoner (sarcastically): "No woman is perfect!"

Union Made

"I have a watch that strikes."

"My, how wonderful!"

"Not at all. It's quit working."

Mr. Simon: "A traveling man told me—"

Mr. Cady: "Hush! Wait just a moment till these ladies pass."

Sparing the Lawmakers

Sandy Hoyle, negro janitor of the "Advocate," listened to a discussion by the foreman and the intelligent compositor on the commercial possibilities of the aeroplane. Sandy seemed deeply interested, but at the close of the conversation he shook his head solemnly and said:

"White folks may do great things with them flying machines, but one thing I know fo' suttin—they won't never need no Jim Crow cars on 'em."

Penalty of Being Dry

An Oklahoma editor was much interested in a scientific note he encountered in a New York paper to the effect that if the earth was flattened the sea would be two miles deep all over the world.

The editor reprinted the note with the following comment:

"If any man is caught flattening the earth, shoot him on the spot. There's a whole lot of us in this state that can't swim."

Business Tip

Ragman: "Any old bottles today, mum?"

Woman: "No, but you might try Mr. Soakem's next door; his wife is coming home tomorrow."

Bounced

The new baby had proved itself the possessor of extraordinary lung power. One day baby's brother, little Johnny, said to his mother:

"Ma, little brother came down from Heaven, didn't he?"

"Yes, dear," answered the mother.

Johnny was silent for a minute, and then he went on:

"I say, ma."

"What is it, Johnny?"

"I don't blame the angels for slinging him out, do you?"

Jack the Time Killer

There's a prospect to see in the morning;
    But before Jack attempts any work
He settles the war for an hour or more
    In a talk with the telephone clerk.
He looks at a couple of letters
    And sketchily skims through the news
And says that the dope bears out his fond hope
    That the Giants are going to lose.

He goes out to luncheon at noontime
    And sits 'round and puffs a cigar,
While he stoutly contends to a couple of friends
    That this fighting is going too far.
He is back on the job at two-thirty
    And sticks till a quarter past four,
Then he strolls to the board where the tallies are scored
    And "fans" for a full hour or more.

At his home or hotel in the evening
    He plans out the Russian campaign.
He tells all the bunch of his newly-born hunch
    That the plans of the Allies are vain.
He sits 'round till bedtime deploring
    The prices of foodstuffs and cotton,
Then he climbs into bed, wearied out and half dead,
    And wonders why business is rotten!

—Author Unknown.

Two boys were staring in a hairdresser's window, and seeing the barber singeing a customer's hair, one said to the other, "Golley, Bill, he's looking for 'em wiv a light!"

"Gimme three cigars."

"Strong or mild?"

"Gimme the strong wans. The weak wans break in me pocket."

My Auto, 'Tis of Thee

"My auto, 'tis of thee, short cut to poverty—of thee I chant. I blew a pile of dough on you two years ago and now you refuse to go, or won't or can't. Through town and countryside, you were my joy and pride; a happy day. I loved thy gaudy hue, thy nice white tire so new, but now you're down and through in every way. To thee, old cattlebox, came many bumps and knocks; for thee I grieve. Badly thy top is torn, frayed are thy seats and worn; a whooping cough affects thy horn, I do believe. Thy perfume swells the breeze, while good folks choke and wheeze, as we go by. I paid for thee a price, 'twould buy a mansion twice; now are all peddling 'ice'—wonder why? Thy motor has the grip, thy spark plug has the pip, and woe is thine. I, too, have suffered chills, ague and kindred ills, endeavoring to pay my bills, since thou wert mine. Gone is my bank roll now, no more 'twould choke the cow, as once before. Yet if I had the mon, so help me John—amen. I'd buy a car again, and speed some more."

Indulgent

A North County vicar married an elderly couple at eleven o'clock in the morning. At three in the afternoon his duties took him to the neighboring cemetery, where he met the same couple seated lovingly on one of the benches.

"You see, sir," the husband explained, "my wife is a real 'un for pleasure. I wanted to go back to me work this arternoon, but th' missus sed we'd better enjoy ourselves to th' full and mak' a day on't."

Why So Anxious?

Mrs. Cox (handing to her husband a saucer full of white powder): "John, taste that and tell me what you think it is."

Mr. Cox: "It tastes like soda.' '

Mrs. Cox: "That's what I told Bridget. She declares it is rat poison. Taste it again to make sure."

"Parson: "How is it I haven't seen you at church lately?"

Hodge: "I ain't been."

Located at Last

A traveling salesman returned in a very despondent mood after being out on the road for a month. His boss, noticing his dejection, said:

"Harry, why do you look so bad?"

Harry retorted: "I wish I could die and go to hell."

Boss: "Why do you make such an awful wish, Harry?"

Harry: "Because everywhere I go the merchants say business has gone to hell."

Circumstantial Evidence

One morning Mr. Bainbridge came downstairs in a very disturbed state of mind. He informed his wife that little Bobby had taken some money out of his pocket.

"Now, Henry," said the wife, reproachfully, "I don't think it is right for you to charge Bobby with taking money out of your pocket. Why, you might as well accuse me!"

"Oh no, Sue," replied the brute. "It wasn't all taken, you know."

His Daughter's Voice

Patrick sat in the kitchen watching his wife peel potatoes. Mary Ann, their daughter, was in the front room playing the piano and singing at the top of her voice.

"Patrick," said his wife, "phwat does the singing tacher mane when he says, 'Mary Ann's voice is mellow'?"

"Oh," said Patrick, "that's jest a nice name for rotten. These music fellers they do be so polite."

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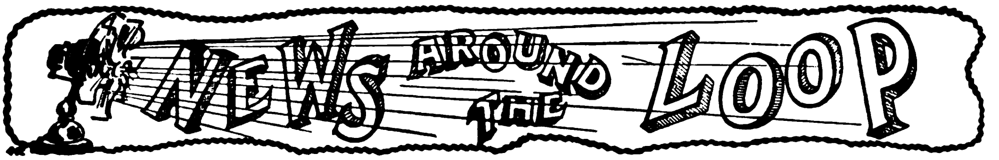

Fresno

Vacation time is here and with the beginning of June the Fresno office will begin taking their annual respites from work. Mrs. Friese, stenographer to Auditor D. M. Speed, will be the first of the Fresno office to enjoy her time off duty and from that time on until the warm weather has ceased, the members of the main office force will be taking their leaves with regularity. San Francisco and the Panama-Pacific Exposition promise to be the most popular vacation place this year.

General Manager A. G. Wishon, Chief Engineer G. O. Newman of Los Angeles, and Engineer William Stranahan made a trip to Merced Falls the first of the month in connection with the work of power house construction which is soon to be started at that point.

A. Y. Meudell, gas superintendent of the Bakersfield district, was in the Fresno office during the month while on his way to Merced in connection with an inspection of the system at that point. Mr. Meudell later was in the Selma district to give the gas service his personal attention for a day.

W. E. Whittington, district agent at Los Banos, was in the Fresno office during the month for a regular conference with the business department.

F. V. Boller, district agent at Coalinga, was a visitor in the Fresno office during the month on business connected with his district.

O. M. Simpson, chief clerk in the Bakersfield office, was a visitor in the Fresno office during the month for a conference with the auditing department.

J. F. Pollard, assistant engineer for the Railroad Commission, has been in the Fresno office the past month working with O. S. Ambrose in compiling the data for the review of the rate hearing.

General Agent E. D. Farrow, Jr., has been confined to his bed for several weeks during the month on account of illness.

District Agent Paul B. Wilson was in the Fresno office from his headquarters at Madera during the month. Paul says that the Madera office force plays tennis every night after office hours and the boys will soon be ready to challenge all comers.

R. Casad, district agent at Merced, was among the out-of-town visitors to the Fresno office during the month. He happened in on a Friday and remained over night to witness the Orpheum vaudeville show.

George Beatty made a trip to the Bakersfield district during the month and also kept a sharp lookout on the teaming "up the hill."

Engineer Emil Newman, in charge of the work now in progress in the Crane Valley district, was a visitor in the Fresno office during the month.

Chas. Tanner, who for several months past was holding down the operating job at the Reedley substation, passed through Fresno during the month on his way to the Crane Valley district where he has charge of the treating of the timber for the No. 3 flume. Relief Operator D. P. Goldsmith has taken the place in the Reedley sub made vacant by the departure of Tanner.

Traveling Auditors C. C. Dickson and E. S. Erwin have been putting in their time this month in the valley districts.

H. M. Crawford, commercial manager of the Bakersfield district, was in Fresno during the month for a conference with the local members of the business department.

"Captain" Jack Frost of the Selma district was a visitor in the Fresno office on several occasions during the month. The representative from the southern district has recovered his waist line and happy smile lost during his recent indisposition.

Auditor D. M. Speed made a trip to the Pleasant Valley Farm and then to the Bakersfield district the early part of the month.

Miss Sahm, stenographer for Miss Hickman, has returned to her desk after her recent illness.

Do not let your eyes deceive you. Jerry LaMarsna has not sprouted wings. This is merly a trick of Jack Carter's to snow how Jerry would look were such a miracle to happen. Jerry and Fred Reeves have just returned from a piece of trouble near Button Willow in the Midway district and they brought home the cause of the disturbance, a pair of blue herron wings. With that smile Jerry surely would make some angel.

Assistant General Manager A. Emory Wishon made a trip to the coast counties district and to San Francisco during the month.

Relief Operator P. C. McCorkle put in the time this month relieving the operators at the Fresno substation.

Much regret was expressed for Operator William Manson of the Fresno substation over the death of his mother which occurred May 13th. Mr. Manson lost his father only a few months before and he has the heartfelt sympathy of his many friends in his hour of grief.

Operator E. G. Bolton, of the Fresno substation, is again at work after his collision with a motorcycle. Bolton was returning home from work on his bicycle when he encountered a motorcycle traveling in the opposite direction. He came out second best with a broken left shoulder blade, which laid him up for several weeks.

Operator C. H. Pinney, of the Tule River power house, was a visitor in the Fresno office the latter part of the month while on his way home from his vacation.

The boys who visit the Henrietta substation say that Operator Hugo Frank is rapidly becoming unrecognizable. He has permitted his beard and mustache to grow until they have attained the proportions of the most prized hirsute adornments of a French sheepherder or distinguished member of the Russian War Party.

Line Foreman Moore, of the Coalinga district, was a visitor in Fresno during the week the Eagles convention was held.

P. P. Cutter and L. J. Moore are winning the distinction of being the most ardent tennis players of the Fresno office. These two enthusiasts play a good fast game and are very evenly matched. Recenly Cutter succeeded in defeating Moore after a hard fought series of close-scored games, but it was some battle and the next day Cutter was as sore as if he had gone through a sausage grinder. They are anxious to compete with the tennis cracks from some of the outside districts. You Madera sports please reply.

When the Islam Temple of the Nobles of the Mystic Shrine made their annual pilgrimage to Fresno on May 15th, Assistant General Manager A. Emory Wishon and Chief Inspector J. M. Buswell were among the fifty-odd novices gathered together to receive them. The two power company officials were duly initiated, much to the delight of their many friends privileged to witness the ceremony.

To care for the largely increased installation at the Valley Ice Company plant in Fresno, a new line has been built down Jensen Avenue connecting the plant to the west 60 instead of the thirty thousand volt system as heretofore.

Now that vacation time is here, Bill Otts, the company's genial representative at Clovis, has listened to the call of the pleasure seekers and has gingerly responded. Editor Armstrong of the Clovis Tribune has the following to say about Bill's vacation this year —Bill's vacations are always a matter of the utmost concern to the people of Clovis:

"The 'vacation bug' is making his annual visitation to Clovis. W. C. (Bill) Otts, its first victim, has been stung bad. He says no Alaska or Peru for him this year, just plain Panama-Pacific for Bill. He says he can't afford to accept invitations from foreign potentates and other dignitaries to meet them at their homes on foreign soil, it costs too much for fare and trimmings. Aside from this he has no desire to dodge submarines or swim fifty miles on the briny deep to escape some blarsted furriner who is a war maniac. Bill proposes to hob nob with mild-eyed Andalusians and blue-haired Malayan maidens, and talk Punjab or write Sanskrit with Hayab Singh Bey and the other fellows at the Exposition for several months at least. He expects to purchase several carloads of rare specimens at the Expo and donate them to Clovis as the first installment of a museum of natural history which he asserts is a crying need here. He has also promised to write us a weekly letter of his adventures and trials at the Exposition. This promises a rare treat to our readers. Wait for the letters."

E. M. Haggerty, of the inspection department, surprised his many friends by entering the ranks of the benedicts. Friday, May 14th, accompanied by Mrs. Marion Morrison, he sped to San Francisco and the following day in the parsonage of the Christian Church in the bay city, they were made man and wife. After several days spent in visiting the Fair and other interesting bay points, the young couple returned to Fresno and are now domiciled at 1015 O Street. "Hag" has been passing the cigars since his return.

Ship Speed, of San Francisco, is a new member of the clerical force at the tower.

Bakersfield

General Manager A. G. Wishon and Assistant General Managers A. Emory Wishon and E. B. Walthall were in the Bakersfield district during the month.

Gas Superintendent A. Y. Meudell made a trip to the coast during the month and also to the gas districts in the upper end of the San Joaquin Valley.

General Superintendent E. A. Quinn was in the Bakersfield district during the month.

H. H. McClintock, of the Midway Gas Company, was a visitor in the Bakersfield office during the month.

O. A. Walthall, district agent at

A glimpse of social life in the oilfields. Scene at one of the recent dancing parties of the Petroleum Club of Taft, of which District Agent Jack Carter is the honorable president

McFarland, was in the Bakersfield district during the month.

W. A. Sutherland and Murray Bourne, of the legal department, were visitors to the Bakersfield district during the month.

O. S. Ambrose and Mr. Vaughn, of the railroad commission, returned to Fresno the end of the month, after having spent several weeks in the Bakersfield district making investigations in connection with the rate hearing.

George Beatty, in charge of the livestock and equipment of the company, was in the Bakersfield district several times during the month in connection with the transformation of the old car barns at Union Avenue and 19th Street into a stable. With the able assistance of Ace Meudell and Charlie Underwood he has succeeded in building up a regular horse palace.

The office of Street Car Superintendent John F. Turner in the old car barn has not been disturbed by the new order of things in that establishment. It is said that on circus day he dedicated the new building by giving a chicken dinner. With the able assistance of George Beatty there was plenty of chicken on hand and the feast is declared to have been a remarkable success.

The K. V. A. Club of the Bakersfield office gave another very successful dancing party the night of April 24th at Taylor's Hall. The ballroom was very prettily decorated with pepper boughs and made a most attractive place in which to dance. The music was furnished by the Camprubi-Mutter orchestra and was very much enjoyed. A fruit punch was served during the evening. The committee in charge of the affair, to whom all credit for its success is due, was comprised of: Miss Martha Graham, Miss Thea Belle Altstaetter, C. L. Easton, H. M. Crawford and D. B. Ogle. There was a good attendance present. A number of the club members were unable to attend, being out of town on business, but there was a big representation nevertheless. The members present were: Mr. and Mrs. C. L. Easton, Mr. and Mrs. J. F. Turner, Mr. and Mrs. Ed Millard, Mr. and Mrs. J. M. Niccolls; Misses Dena Pesante, Rose MeGeary, Martha Graham, Thea Belle Altstaetter; Messrs. Lou Johnson, L. Hileman, H. P. Bender, D. B. Ogle, John Ogle, O. A. Walthall of McFarland,

A. N. Jacobs, A. B. Simpson, A. K. Carson, A. J. Radford, John Aston, Geo. Bauwens, E. S. Erwin of Fresno, C. C. Dickson of Fresno, H. Wiebe, B. Furman.

The guests were: Misses Bare of Selma, B. Sangster of Selma, Pesante, Della McCray, Gladys McCray, Hazel Burns, Grace Whaley, Jessie Cretsinger, A. Wildman, Bessie Bonham, Lottie Fox, Furgerson, Miller; Mr. and Mrs. C. Nelson; Messrs. A. Anderson, D. B. Arrell of Taft, Bornstein, H. Benfield, J. Carmichel, L. Craig, O. Kofhal, H. McKinley, Paul, Sotterfield, Tedford of Taft, Arthur Anderson, W. Dietze, Behres.

There was so much rain in Bakersfield during the months of April and May that Auditors Dickson and Erwin became familiar sights standing at their desks in the accounting department with an umbrella over them to protect their work as well as themselves from the rain which insisted in dripping through a slight opening in the roof.

Frank Easton is home on his summer vacation from the University of California and is working in the gas department in the absence of Arthur Church, who was called south on account of the illness of his mother.

John King is now reading meters over the route formerly covered by L. Hileman.

G. Gregg is filling the position formerly occupied by John King.

R. C. Mallery is now the cashier of the Bakersfield office and Odin Bickerdike is holding down the desk formerly occupied by Mallery.

Ed Millard of the consumers counter enjoyed his vacation the latter part of May.

Jim Lochead has returned from Berkeley where he has completed his term's work at the University of California and at present is filling the position as relief operator at the Kern River Canyon plant.

Doc Radford, one of the regular operators at the Kern River plant, has gone to the Tule River plant to work a relief shift there over the summer months.

F. H. Klippel, of the inspection department, has returned from the office in Fresno where he temporarily filled a position for five weeks.

Auditor D.M. Speed visited the Bakersfield district during the month.

Traveling Auditors Dickson and Erwin returned to Fresno after an extended stay in Bakersfield, the middle of the month.

Los Banos

Fred Carroll, one of the very courteous and obliging members of the Los Banos office force, recently came in for the following mention inthe Los Banos Enterprise, and his many friends throughout the system have not been overlooking the opportunity to congratulate him upon the happy event:

The legion of friends of Mr. and Mrs. Fred C. Carroll have been extending their congratulations over the arrival of an important visitor at the Carroll home this week. The young man arrived on Tuesday, April 20th, and while he weighed but ten pounds, it is confidently expected that in this gloriously invigorating climate he will begin to "pick up" at once and that his avoirdupois will soon be greatly increased. Mrs. Carroll (nee Ruth Smith) will be remembered as one of Los Banos' most popular school teachers in which capacity she won the affection of both pupils and parents.

General Agent E. D. Farrow, Jr., accompanied District Agent Whittington on a visit to this territory the latter part of last month.

Construction Foreman Mark Webster and his very efficient crew have been in the district for the past month at work on the new equipment at the substation.

General Superintendent E. A. Quinn and Electrical Superintendent Harvey Shields paid the Los Banos district a visit of inspection the early part of the month.

Los Banos continues to make noticeable strides in development and during the month the announcement was made that the Odd Fellows would in the near future begin the construction

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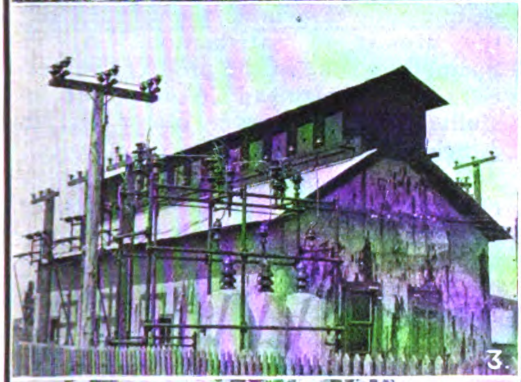
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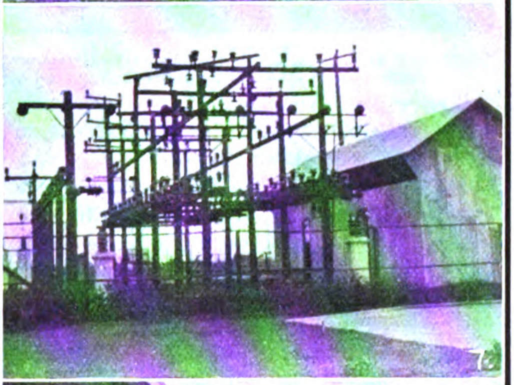
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A day off with Chief Dispatcher Moore and his camera on a trip down the "West 60." 1, The smelter at the old works of the Fresno Copper Company near the Copper Mine Switching Station. 2, At the Kings River Substation; from left to right, Mike Dodge, W. H. McKenzie, and Operator Haselbusch. 3, The 30,000 volt original Copper Mine Substation, a landmark on the system. 4, The children of Charlie Lang, operator at the Copper Mine Station. From left to right, Wilma, Wallace and Doris. 5, The cottage and croquet grounds at the Strathmore station. 6, Operator Orr, Mrs. Orr and Mrs. Ranier on the lawn, and last but not least, "Boots" Orr in the front at Strathmore. 7, The switching rack at the Strathmore sub. 8, "Boots" Orr performing for the camera man.

of a $40,000 temple and business block. The plans have been prepared.

Another step in the improvement of the city is the action of the city council in determining to pave fifteen blocks of the city streets. When this work is completed Los Banos will be among the foremost of the valley cities in street improvement work of this kind, considering the size of the city.

The rains of the past six weeks have been particularly heavy on the west side and toward the middle of May had the grain men somewhat on the anxious seat.

W. I. Hollingsworth of Los Angeles, one of the owners of the Dos Palos Rancho, visited the tract during the month in connection with the work of development now under way there.

District Agent W. E. Whittington went to Fresno the middle of the month to confer with officials in the central office in regard to business matters affecting this district.

Madera

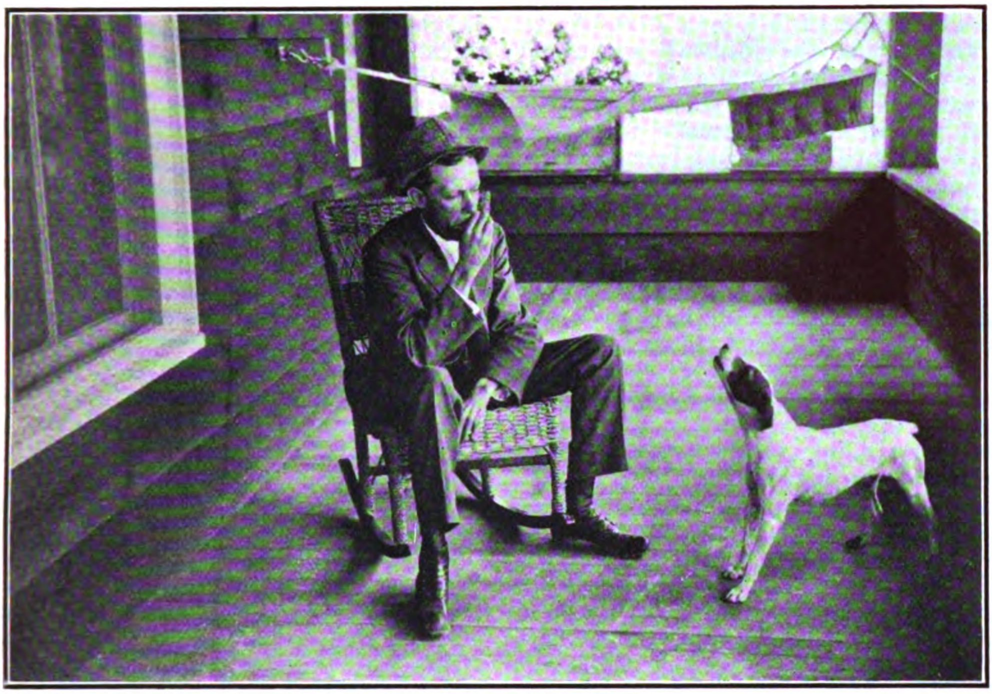
Traveling Auditor C. C. Dickson spent several days in the Madera office making the regular audit.

D. V. Kimmick, assistant bookkeeper, enjoyed his vacation during the month and reports having a very large time. He viewed both expositions, going from Madera to San Diego by rail where he joined a party of relatives and then motored to San Francisco where the sights of the big Panama-Pacific show were viewed until time to return home to work.

District Agent Paul B. Wilson has been doing some good work recently in securing additional load in the agricultural district and during the past month connected up a number of pumping plants. John L. Price, who owns a very attractive farm not far from the city of Madera, installed a 7½ horsepower motor on a 3½-inch pump. John J. Peters, a well known rancher in the Fairmead district, who had been operating with a 12 horsepower gasoline engine, took out this machinery and in its place installed a 5 horsepower motor to run his 3-inch pump. Mr. Peters is very much pleased with his motor and finds the advantage greatly on his side. N. E. Sanders, the owner of a very promising farm in the Chowchilla Colonies, also abandoned his gasoline engine during the month, installing in its place an electric motor. Mr. Sanders formerly used a 15 horsepower gasoline engine to operate his 4-inch pump, but he is now using a 7½ horsepower electric motor, and he finds that the electric way of irrigating is all that its most ardent advocates claim for it. Another Chowchilla Colony property to replace a gasoline engine with an electric motor during the month, is the ranch of Hutching Bros., Inc. They previously drove their 4-inch pump with a 15 horsepower gasoline engine but were convinced by District Agent Wilson that the work could be more satisfactorily and economically done with a 7½ horsepower motor and they accordingly made the change in their equipment. The new plant is giving the utmost of satisfaction. A. E. Springburg, one of the progressive settlers in the Fairmead Colonies, has installed a 5 horsepower motor on his 3-inch pump.

During the past year the use of electricity in the mining districts of Madera County has been largely extended and as a result the operations of mining companies are being increased. By using electricity as a motive power it has been found that the mines can now be worked at a profit whereas previously the high cost of transporting water and fuel discouraged operations. The new line recently built to the Texas Flat mine has stimulated activity in the districts and now many other companies have begun to figure on similar installations. The following from the Madera Mercury is an indication of the renewal of interest in the mining district:

J. H. Lester, manager of the Gambetta mine at Grub Gulch, who is in Madera today, is hopeful that power soon will be installed at the Grub Gulch mines. He says that all that is holding back the Madera County gold mining district from becoming extremely productive is the high cost of



A doggone concert in the oilfields. "Sport," the accomplished soloist of the J. B. Carter household, singing "A Long Way to Tipperary" to the harmonica accompaniment of his master

water and fuel. The use of power will make it possible to handle the ores at little more than half the present cost.

Taft

District Agent J. B. Carter and Mrs. Carter made a trip to Los Angeles the first of the month, a matter in court requiring Jack's presence in the southern city.

Much sympathy has been given Angus Stewart over the loss of his personal effects which went up in smoke when fire consumed recently the hotel where he made his home. Angus cherished among his belongings records of many years which cannot ever be replaced. He made a fine effort to save his effects but the fire had gained so much headway by the time he reached the scene the entire structure was enveloped in flames and it was impossible to save anything. The fire occurred during a heavy wind storm and for a time much concern was felt for the safety of Taft. A power pole and guy wire played an important part in holding up a wall, which otherwise would have fallen upon adjoining property and permitted the spreading of the flames. District Agent Carter and the boys did fine work in restoring the service.

"Billie," the pet road runner of Angus Stewart, has recovered from his recent accident and is now making his daily visits around town as chipper as ever. Billie is a real live bird and recently he was struck in the leg by a boy behind a slingshot. The leg was broken but Angus brought his versatility into play and with much cleverness performed an operation in bird surgery by setting the fractured member in splints. Its leg healed perfectly but even though he will always walk with a slight limp, Billie is very grateful to his master and never misses a chance to show his affection.

During the rainy and stormy weeks of the past few months Line Foreman Jerry LaBarsna and his crew have been kept on the jump but they have done good work in keeping the service up.

The home of Mr. and Mrs. A. G. Carpenter at the Midway substation has been greatly brightened by the arrival of an adopted son. The little lad put in his appearance the latter part of April and he has been keeping things humming around the Midway sub ever since. The boy, a bright little fellow and as good as he is handsome, has been named John Clifton Carpenter, the first name in honor of the district agent and the second the teamster. With such illustrious personages as examples ever to look up to, the little lad cannot help but make good. He has injected a lot of life into the doings around the Midway sub and the dogs of the Carter household are beginning to complain that Mrs. Carter spends too much of her time at the Carpenter house. The little fellow is slowly but surely making an acrobat out of Carp. He has him standing on his head and one ear part of each day and before long Carp will be inventing new steps in the tango and fox trot.

Crane Valley

There is no further doubt about a full lake this year as the rains during the latter part of April and the first of this month have caused the big water body to rise rapidly. There has been, in addition, a good snowfall in the back mountains and before many more weeks have passed it is expected that water will be going over the flash boards in quite a volume. May 17th the lake level was 109.6 feet with little more than five feet yet required to fill. The rainfall during the first part of May was exceptionally heavy, the first nineteen days of the month registering 5.87 inches. The season's rainfall to that date was 34.91 inches.

Curley Rodgers returned to his headquarters at No. 3 the middle of the month after a very enjoyable vacation spent down in the valley. He visited the office force in Fresno for several days.

Operator Longtin of No. 3 power house enjoyed his vacation during the month, making the trip down the hill in a Ford. On the return trip he was caught in the rainstorm and had an interesting time in again getting the machine back to camp.

General Superintendent E. A. Quinn and Inspector Buswell were in the Crane Valley district during the month conferring with Power House Superintendent Elmer Gates in regard to work under way in this district.

Engineer Emil Newman has been handicapped to quite an extent by the heavy rains in the work he has begun on the No. 2 reservoir site and No. 3 flume. Mr. Newman has his camp established and is making headway as rapidly as the elements will permit.

Under the direction of Power House Superintendent Elmer Gates a dredging bucket has been set up and the work of cleaning the sand out of No. 1 reservoir is now under way.

George Beatty made a trip up the hill during the month overseeing the teaming that is being done on the No. 2 reservoir and flume job.

Charles Tanner, of the pole treating department, is now making his headquarters in this district where he is treating the timbers going into the No. 3 ditch work.

Mrs. Emil Newman was taken with a serious illness the latter part of last month and for a time some little concern was felt for her condition. She is now much improved and is well on the way to complete recovery.

Tule River

The late spring rains have been unprecedented in this locality. Up to the 19th of May, upon which day it was still raining heavily, 8.01 inches of rain had fallen at the Tule River power house for the month. The season's rainfall has been far above the average. There also has been a heavy storage of snow in the mountains, but it is feared that the late rains will cause it to melt prematurely. The power house, during this rainy season, has taken good advantage of the opportunity to grind out juice at capacity speedy and things have been working in good order.

Power House Superintendent Doose is expecting the arrival of relatives from the east who will visit with him and his family at Tule River during the month of June. Mr. Doose will enjoy his vacation in June and the big exposition at San Francisco will be one of the sights taken in.

Operator C. H. Pinney enjoyed his vacation during the month of May, going to San Francisco to attend the fair. He stopped over in Fresno on his return and paid the Fresno office a visit as well as doing some shopping for the boys on the hill.

R. R. Wisner and family went to Fresno the end of the month to enjoy the annual vacation, which will be spent mostly on a visit to Mrs. Wisner's relatives in that city.

Doc Radford, one of the operating force at the Kern River Canyon plant, is in the Tule River power house filling the position of relief operator while the vacations of the regular members of the crew are in effect.

Harry L. Newman, one of the popular members of the Selma office, and Mrs. Newman, a bride of the month. Captain Jack Frost wrote a happy account of the wedding but the story arrived too late for this issue of the Magazine.

Santa Maria

The following correspondence is from the Santa Maria office:

"Editor Magazine: As it has been so long since you have heard from Santa Maria, I suppose you wonder sometimes whether we are still members of the happy family. Well, we still consider ourselves as such, but have not been heard from because Jack Frost, who owned our magazine pen, took it to Selma with him, and it has been hard work finding another.

"In spite of the fact that things have been a little dull in this district as well as others, we have annexed some very nice business since the first of the year. The largest of all is the Kieselguhr Company of America, on the Lompoc extension, which line was built the latter part of last year. The Kieselguhr Company by May 15th will have about 350 horsepower connected. The Kieselguhr Company and its industry are as yet only in their infancy, but as everything points to its rapid growth it should be a large business in another year or so.

"Several small installations have gone in already this year and we have several good prospects which should be finished this year. The Domestic Water Company of Santa Maria is one of these prospects. An installation of about 45 horsepower is planned. The city water is now pumped by steam, but as the machinery is very old and needs extensive repairs, the electric installation is probably not far off.

"For many years, beans have been the chief crop of Santa Maria Valley and have always been raised as a dry crop, yielding from eight to twenty sacks per acre, depending on the soil. This has always been considered a very good crop because irrigation was never considered as profitable. Last year, however, after some land had been irrigated for beets, it was planted to beans and the yield was so much more per acre that P. Giocomini and A. P. Silvera, two progressive Santa Maria farmers, decided to irrigate bean land this year. This will in time make a large increase in the acreage of irrigated land in the valley.

"Wm. Dequerico (commonly known as Bill De Queer-fellow) is still chief at the Santa Maria steam plant and substation. As we have been having excellent service from the hydro now Bill i shaving it rather easy, but it was not so during the winter. He then had plenty of opportunities to show he was alive and could make thing go at the right time. He did this and did it well, although the plant and substation were flooded a good many times and going was hard.

"'Slats' Shelbourn is still in the office. He is also quite interested in the southern city of Ventura, or something therein. Anyway he spends all his vacations there, and about. Before his last trip he was seen comparing diamonds and rubys. Well, I guess they have a great climate at Ventura, because upon his return he was wearing one large smile on his countenance that hasn't worn off yet. Let us hope it never wears off. That kind of a smile doesn't hurt anybody.

E. H. Stevenson, who is running the separator (consumers from greenbacks), is doing about as well as can be expected. Too much cannot be expected, however, as 'Steve' seems to have also found 'her' at last.

H. J. Anderson and his gang have been busy overhauling lines throughout the district, fixing them up after the winter storms and studying out trouble preventatives for next winter. Andy figures that if he keeps tab of the miles his machine makes he should also keep track of the miles he makes. He has a pedometer and he can tell you just how many hundred of his steps it takes to read meter route No. 1.

"District Rgent Fletcher A. Easton was in town several days this month looking up new business.

"Very sincerely,
"SANTA MARIA."

With the Street Car Boys

Conductor Hill has fallen heir to a regular run on the Chester Avenue line with John Bridges as the engineer.

A good story on Conductor Stock has just come to light, although it happened many weeks ago. At 4 o'clock a. m. the morning of April 1st he was called out of bed by some person, the identity of whom has since been a matter of mystery and conjecture, and told to report for duty at 11 o'clock a. m. for his regular run. The genial conductor proved that he could take a joke and crawled back into bed and reported for duty on time.

Conductor Warren now has a daylight run on the main line. It is a great deal more to his liking and he says that the members of his family like it better too.

Conductors F. Waite and C. Cummings recently took their best girls to the Kern River Canon on a picnic during their day off duty.

Conductor Kast is again back at his post after several weeks of illness.

Motorman Buckner was on the sick

"The Wisner Heir," one of the joys of the Tule River Power House Colony list during the month, having been suddenly taken with an illness, but he soon recovered and is again about his duties as usual.

Conductor Spear, who was on the sick list for several weeks, had an interesting experience during the heavy rainfall of last month. He was at Democrat Springs, recuperating from his illness, and when he finally decided to return home he found it impossible to do so on account of the washed out condition of the roads due to the rain. The county sheriff, however, was going down the mountain in a light car and when he found that the railroad boy wanted to go into Bakersfield, he considerately offered him a seat. When the machine drove into the city crowds lined up along the sidewalk to take a glimpse at the sheriff's prisoner. There had been some kind of a shooting scrape in the hills a short time before, and persons not acquainted with the conductor naturally supposed that he was the prisoner. However, to save the good name of Spear, the sheriff stopped the car at the intersection of the principal streets and let his voluntary prisoner go about his way unmolested.

Motorman James Cummings is spending all of his time off duty in working around his house. He has developed into quite a stay-at-home man.

Conductor Files, who hails from Arizona, the home of the gila monster and the bad man, is anxiously surveying the improvement of his new home place. As soon as it is completely finished, the boys have been tipped off, it is to be occupied by a second party. All of the boys are anxiously awaiting developments.

The boys say a change has come in the life of "Pop" Crandall. This veteran motorman recently spent the Sabbath in attending church. His friends cannot get over the change that has brought him back to the habits of his youth.

Motorman Nelson and his family recently enjoyed an entire day's picnic and outing in the Ford car. He says it is a wonderful car, but confidentially volunteered the information that he does not tie his dog onto the running board any more.

Motormen J. Moore and Frank Waite recently spent their day off on a fishing trip and when the return home was made that night they were loud in their praise of the wonderful catches they made. Never saw such fish before, they declare. Never saw any fish at all, the rest of the boys say.

Motorman A. Anderson has moved his place of abode from 20th Street to 10th Street and is now comfortably located in his new residence.

On the 22nd of April the stork left an eight-pound baby at the home of J. O. Arnold, and these days the father is as proud as any peacock that ever strutted a strut. John says he has seen many babies in his travels from Kentucky to California but he has never yet seen a baby that had all of the good qualities of his baby. In fact when John gets to talking about that baby there is no stopping him. On several occasions he has been seen to miss his car while in the midst of an interested recitation of the youngster's latest pranks. To those who are inclined to doubt the fact that John is the father of the only baby in the world, he challenges, "Well, come out to the house and see for yourself."

Motormen Weigan and Anderson have changed runs, the former going on the main line and the latter on the Chester Avenue haul.

A student of Des Moines has made a tiny electric motor which is hardly half as large as a copper cent. It is a little over a quarter of an inch high and weighs 20 grains. It is thought to be the smallest electric motor in the world.

An enterprising ranchman at Bismarck, N. D., having in his ranch an artesian well delivering water at a pressure of 70 pounds per square inch, is utilizing the water therefrom to run to electric plant to supply energy for his own purposes.

Territory of the
San Joaquin Light & Power Corporation

Map Showing the Ten Counties Served and Extent of Territory as Compared to the Total Area of California